Chetco Bar Fire Salvage Project - Biological Evaluation & Wildlife Report

Gold Beach Ranger District, Rogue River-Siskiyou National Forest, Curry County, Oregon

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Contents

1. Summary

Proposed timber harvest activities for the Chetco Bar Fire Salvage Project intend to recover marketable value of trees within the Matrix land allocation that were killed by the 2017 Chetco Bar Fire.

Connected actions include: road maintenance, temporary road and landing construction, timber hauling, activity fuels management, and reforestation. The analysis area includes matrix and designated critical habitats for the northern spotted owl and marbled murrelet.

Scoping issues related to wildlife were effects to early seral habitat with legacies, and effects to listed species.

Proposed Action Terrestrial Wildlife Effects

Table 1 summarizes determinations for federally listed species. For Region 6 sensitive species analyzed, project activities may impact individuals or habitat, but would not likely contribute to a trend towards federal listing or cause loss of viability to population or species (MIIH). Furthermore, continued viability is expected for Siskiyou National Forest management indicator species (MIS) with habitat affected by the project.

Table 1. Summary of effects analysis for federally listed species for the Chetco Bar Fire Salvage Project Proposed Action (Alternative 2).

Common Name	Summary of Effects of Proposed Action
Federally Threatened	
Northern spotted owl (ESA threatened, MIS)	May affect and likely to adversely affect (LAA). Salvage harvest would occur in NSO post-fire foraging habitat that may be used by NSO especially near existing NRF, and would reduce legacy snags in critical habitat which are physical and biological features of suitable habitat. In addition, haul on certain low use roads during the critical breeding season has potential to disturb breeding NSO where suitable habitat is within 35 yards of the road which is considered an adverse effect.
Marbled Murrelet (ESA threatened)	Salvage harvest would not remove or modify suitability of any potential nest trees, however harvest of large snags near potential nest trees adjacent to units may increase exposure to predators and increased sun and wind which may affect but not likely to adversely affect (NLAA) habitat. Haul on certain low use roads during the critical breeding season has potential to disturb breeding MAMU where suitable habitat is within 120 yards of the road which may affect and likely to adversely affect MAMU. (LAA)

2. Proposed Action and Alternatives

A detailed description of proposed activities can be found in the Chetco Bar Fire Salvage Project Environmental Assessment (EA) and supporting documents.

Proposed activities meet objectives and comply with the standards and guidelines outlined in the Siskiyou National Forest Land and Resource Management Plan (USDA Forest Service 1989), as amended by the Northwest Forest Plan (USDA Forest Service and USDI Bureau of Land Management 1994). In addition to the Proposed Action (Alternative 2) and Alternative 3 described below, this analysis includes consideration of taking "No Action" (Alternative 1) which would be no salvage or any connected actions.

Proposed Action – Alternative 2

Proposed Action (Alternative 2) is to harvest dead and dying trees on approximately 4,090 acres with 50-100 percent basal area loss within the 191,197-acre Chetco Bar fire. A detailed description of the proposed action is available in the Project EA.

Approximately 46% of proposed treatment acres are stands with past timber harvest prior to the fire including clear-cut plantations, shelterwood, pre-commercial thinning, etc. The remaining acres are unmanaged stands with no record of past timber harvest activity.

Logging systems include ground-based (tractor), skyline and helicopter systems. Activity-created slash would be left for post-harvest soil stability consisting of fine branches, needles, green vegetation (resprouts). Larger down wood would be left to provide additional ground cover, microclimate conditions, and habitat features for plants and wildlife. Piling and burning of excess debris may occur to reduce fuel loading.

The proposed action includes all design criteria and conservation measures for wildlife outlined in appendix A and the EA. They include measures to prevent or lessen impacts to species that use legacy snags and down wood, and disturbance impacts to northern spotted owls and marbled murrelets.

Connected actions include danger tree abatement on approximately 4.5 miles (270 acres) of maintenance level 1 roads used for access and haul. Danger tree felling could also occur near work areas such as landings. . Landings for ground-based logging are generally ¼ acre or less. Helicopter landings can be ½ to 2 acres and two landings are needed within ½ mile of each helicopter yarding area. Road maintenance would occur on system roads used for the project. About 13.5 miles of temporary spur roads would be built then decommissioned following completion of operations. Treatment of excess debris to reduce fuel loading may occur in all units. Monitoring revegetation success and planting where appropriate which may include site prep (cutting shrub competition), seedling protection (vexar tubing), and manually planting a mix of site-appropriate tree species.

Alternative 3

Alternative 3 is designed to minimize impacts to early seral habitat with legacy biological features by salvage harvesting only managed stands which comprise 1,868 acres of the units proposed under Alternative 2. Reforestation and road maintenance activities would be the same as Alternative 2. Approximately 9.4 miles of temporary roads would be constructed and rehabilitated after use.

Table 2 shows the difference in treatment acres for each action alternative.

Table 2. Comparison of Alternatives 2 and 3 and percent of Chetco and Pistol River Watersheds treated.

	Alternative 2 Acres Treated	Alt 2 % Chetco River	Alt 2 %Pistol River	Alternative 3 Acres Treated	Alt 3 % Chetco River	Alt 3 % Pistol River
Managed Stands	1,868	0.75%	<0.1%	1,868	0.75%	<0.1%
Unmanaged Stands	2,222	0.8%	0.5%	0	0	0
Total Acres	**4,090**	**1.5%**	**0.6%**	**1,868**	**0.75%**	**0.1%**

3. Background – Terrestrial Wildlife

Analysis Area

Project effects to wildlife are evaluated by number of known sites affected, acres of impacts or

changes to specific habitat(s), and extent, duration and timing of disturbance. The scale and methodology for evaluating effects differ by species based on their habitat requirements and the type of status they have. In general, the Chetco River and Pistol River 5th field watersheds are used as the analysis area. The Chetco River watershed is approximately 225,230 acres of which 78% is managed by the RRSNF. The Pistol River 5th field watershed is approximately 67,285 acres of which 52% is managed by the RRSNF.

More detail about analysis areas and methods is provided in the effects analysis for each species. Furthermore, mandatory and recommended Project Design Features are discussed for each species as appropriate.

Consultation with U.S. Fish and Wildlife Service

During development of the Chetco Bar Fire Salvage project, the Forest Service began early conversations with the U. S. Fish and Wildlife Service (USFWS) on potential effects to federally listed wildlife species. This included participation by the USFWS field biologist on the interdisciplinary team and field visits to the project area on December 13 and 14, 2017, and February 6 and 7, 2018.

Formal consultation between the Forest and the Fish and Wildlife Service began April 26, 2018 and a biological opinion was received by the Forest on June 5, 2018. All activities would be implemented consistent with project descriptions and mandatory project design criteria (PDCs) identified in the final biological assessment and the Service's corresponding biological opinion.

Wildlife Policy

A list and description of wildlife policy relevant to this project can be found in appendix B. It covers the Endangered Species Act (ESA federally listed species), FS Region 6 sensitive species, Northwest Forest Plan survey and manage species, Siskiyou Forest Plan management indicator species, migratory birds and pollinators.

4. Design and Conservation Measures

See appendix A for the complete list of measures anticipated to prevent or minimize the risk of adverse effects to wildlife species as described in this analysis of project effects. Measures include all mandatory project design criteria (PDCs) from relevant consultation documents and standards and guidelines from the Siskiyou National Forest Land and Resource Management Plan (USDA Forest Service 1989).

5. Affected Environment and Environmental Consequences – Terrestrial Wildlife

Species Reviewed

The full list of species reviewed can be found in appendix C. We reviewed all terrestrial wildlife species which are documented or suspected to occur on the Rogue River-Siskiyou National Forest and are designated as sensitive within USFS Region 6 (Pacific Northwest Region). Appendix C lists these species by common name, scientific name and primary habitat.

In addition, we reviewed survey and protection buffer requirements for species listed as survey and manage under the Northwest Forest Plan (December 2003 species list but with red tree vole as category C and giving special consideration to 12 species), assessed population viability of management indicator species (MIS) from the Siskiyou National Forest LRMP, and assessed project impacts on groups of species covered under a presidential executive order or an agency memo of understanding (e.g. migratory birds).

Species Not Impacted

Table 3 lists regionally sensitive species whose occurrence are neither documented nor suspected on Gold Beach Ranger District. Because their ranges are unlikely to overlap the analysis area, they are not being analyzed further.

Table 3. Federally listed and regionally sensitive wildlife species (16) not analyzed further because their known ranges do not overlap the area of impacts. These species are not suspected to occur on Gold Beach Ranger District.

Common Name	Common Name	Common Name
Gray wolf (endangered)	Siskiyou Mountains salamander	Modoc Rim sideband
Oregon spotted frog (threatened)	Black salamander	Oregon shoulderband
Wolverine	Tri-colored blackbird	Siskiyou hesperian
Sierra Nevada red fox	White-headed woodpecker	Traveling sideband
Franklin's bumblebee	Gray-blue butterfly	Coastal greenish-blue butterfly
Siskiyou short-horned grasshopper		

Table 4 lists regionally sensitive species whose occurrence is either documented or suspected on the Gold Beach Ranger District, however there is no habitat for these species in the project area that would be affected by project activities. The Forest NRIS database, the Cornell Lab of Ornithology ebird database, and any known documentation on Gold Beach District were consulted for species occurrences. No impacts are anticipated to these species and rationale is provided in the table. These species will not be analyzed further.

Table 4. Regionally sensitive wildlife species (10) not analyzed further because no measurable impacts to primary habitat would occur or species is unlikely to be present in project area.

Common Name	Rationale for No Impact
American peregrine falcon	No activities near any known eyrie or cliff suitable for an eyrie. Nearest peregrine management area is 9 miles northeast of the project area.
Harlequin duck	No activities would occur in riparian reserves that may provide habitat for this species, no impacts anticipated that would affect habitat suitability. No documented sightings on the Forest. Nearest sighting in Curry County is Cape Sebastian (Stevens, M .B. 2017.)
Northern waterthrush	No activities would affect bogs or wet areas with riparian thickets of willow and other vegetation. Nearest recorded sightings are in coastal wetlands at Nesika and Harris Beach (eBird 2018).
White-tailed kite	These birds are associated with low elevation valleys and deciduous woodlands, large grassy areas and agricultural fields. No documented occurrences in Chetco or Pistol River watersheds.
Coronis fritillary	Activities would not affect suitable serpentine habitat for this species. No occurrences documented in Chetco or Pistol River watersheds.
Johnson's hairstreak	No activities would remove live conifers that may host suitable mistletoe species. No occurrences documented in Chetco or Pistol River watersheds.
Mardon skipper	Activities would not affect suitable serpentine bunchgrass meadow habitat. The nearest known population is Windy Valley, approximately 2 miles north of project units. Proposed units were dominated by trees and brush prior to the fire and do not include habitat comparable to known sites.
Foothill yellow-legged frog	No activities would affect suitable habitat for these frogs. No activities will occur in riparian reserves. Project BMPs and standards and guidelines for riparian reserves would protect potential stream habitat. This species is documented in both the Chetco and Pistol River watersheds.

Western pond turtle	No activities would affect suitable habitat for these turtles. Project BMPs and standards and guidelines for riparian reserves would protect streams and other wet riparian habitat. No documented occurrences of this species in the Chetco or Pistol River watersheds.
Townsend's big-eared bat	No activities would affect caves, mine adits, abandoned buildings or large bridges in this project. This species is documented to occur in both watersheds.

In addition to these species, habitat for other aquatic strategy species (e.g. coastal tailed frog) identified in the Kalmiopsis COA would not be affected by project activities. Project best management practices (BMPs) and forest plan standards and guidelines would provide protection of streams and other wet riparian habitats.

Species Potentially Impacted

Following are those regionally sensitive species and Siskiyou National Forest management indicator species (MIS) analyzed further because their habitat or individuals might be impacted by activities. All adverse impacts are minimal and would not likely contribute to a trend towards federal listing or cause a loss of viability to the population or species.

R6 Sensitive:

Pacific fisher	Lewis' woodpecker	Green sideband
Pacific (coastal) marten	Purple martin	Pallid bat
Bald Eagle	Western bumble bee	Fringed myotis

MIS: Spotted owl, pileated woodpecker, other woodpeckers, Pacific marten, deer & elk

5.1. Existing Conditions – Habitats

The Chetco Bar Fire Salvage project is located approximately six miles northeast of Brookings, Oregon. The project boundary is entirely within the Chetco River and Pistol River 5th field watersheds.

The 191,197-acre Chetco Bar fire area is a mosaic of burn severity ranging from little to no burn to complete stand replacement. Approximately 89 percent of the fire area is National Forest System (NFS) lands. Proposed project activities occur within stands that sustained greater than 50% basal area mortality as a result of the fire on NFS lands.

These two watersheds are in the Oregon Klamath Province with documented NSO and marbled murrelet occupancy

According to the 2012 NSO Recovery Plan Appendix B, the Oregon Klamath Province experienced the greatest amount of habitat loss on federal lands of all provinces between 1996 and 2006 due to wildland fire (93,600 acres) much of this was in the 2002 Biscuit Fire which burned in the Chetco and Pistol River watersheds. In 2017, the Chetco Bar fire burned within the Biscuit fire and an additional 77,900 acres beyond the Biscuit Fire boundary in these two watersheds. Preliminary post-fire habitat mapping (RAVG) estimates 12,450 acres of NRF burned with moderate-high severity in the Chetco Bar fire. Post-fire landscape-scale habitat conditions within the Chetco Fire action area (defined later) provide some long-term concern for the northern spotted owl and marbled murrelet. The distribution and availability of spotted owl nesting, roosting, foraging (NRF) and dispersal habitat was fragmented prior to the fire due to ownership patterns and effects of past management; the scale of high severity fire and subsequent private land salvage harvesting has exacerbated those conditions. NRF habitat is still present in areas that either did not burn or had low burn severity (24 percent of NFS lands in the fire). NRF habitat that burned at higher severity may still provide foraging habitat for spotted owls, especially in areas adjacent to existing NRF. The ability of this landscape to provide dispersal habitat that facilitates movement between large functional NRF habitat blocks will be limited and fragmented for a long period of time.

Furthermore, in 2016 the Oregon Department of Fish and Wildlife (ODFW) identified Conservation

Opportunity Areas (COA) across the State of Oregon which are priority areas for reaching fish and wildlife conservation goals (http://oregonconservationstrategy.org/conservation-opportunity-areas/) in partnership with federal public land management. One of these, the Kalmiopsis Area, overlaps the lower part of the Chetco River 5th field watershed which was affected by the fire. Species recommended for habitat conservation in this area include fisher, marten, Del Norte salamanders and Coastal tailed frogs among others.

Dead Wood

The Project focus is removal of dead and dying trees with commercial value, therefore dead wood is the habitat element that would be most impacted by project activities and the evaluation of those impacts begins with the following discussion.

The Forest Service Region 6 uses the DecAID model to evaluate snag and down wood densities at the watershed scale (http://www.fs.fed.us/r6/nr/wildlife/decaid/). DecAID is an advisory tool based on best available science to help determine reference and current conditions for large snags and other dead wood at the watershed scale (Mellen-McLean and others 2012). It is based on data from plots in unharvested stands to provide dead wood distribution that represents natural variation for comparison with the current distribution of dead wood in a watershed. This provides a basis to evaluate the effects of management activities on dead wood levels and the organisms that use decayed wood and considerations for dead wood management.

The current condition is the actual, current forest condition given all historic and modern human disturbances (including harvests, fires, etc). The RAVG post-fire data was used to update the current vegetation condition for this analysis which was the best data available for the project timeline.

For this project, southwest Oregon mixed conifer-hardwood is the forest habitat type characterized by the plot data used for the DecAID analysis. This habitat consists of a diverse array of plant species. In the fire area, Douglas-fir and incense cedar are the dominant conifer species mixed with Port-Orford cedar, tanoak, canyon live oak, golden chinquapin, and Pacific madrone. Common shrubs include dwarf Oregongrape, Ceanothus species, salal, Pacific rhododendron, evergreen huckleberry, serviceberry, manzanita, oceanspray, snowberry, hazel, vinemaple, and poison oak.

The mortality and subsequent decomposition of woody vegetation plays a vital role in forest ecosystem processes, affecting aspects such as resilience, biodiversity and fundamental regulating services. There are a wide array of nutrient cycling, trophic interactions and ecosystem processes that function as a result of carbon being slowly released back into the ecosystem through decomposition of dead wood. One of the most beneficial aspects for the ecosystem as a whole is the relationship between mycorrhizal fungi, down wood and most of the land plants, particularly conifer trees. Mutualistic symbiosis in the form of mycorrhizal association should be a fundamental consideration for project planning because of the importance it has on all other life in the forested environment.

Regional scale gradient nearest neighbor (GNN) modeling data from 2012 with RAVG updates from 2017 was utilized to estimate the current distribution of dead wood within this landscape (Appendix D, Maps 1-6). The DecAid analysis assumes that GNN provides the best current scientific data on dead wood ecosystem attributes (see this website for an explanation of GNN spatial data http://lemma.forestry.oregonstate.edu/methods). While not perfect at a site specific or stand level scale, GNN vegetation data helps to show general trends at a landscape scale.

The following figures display the snags per acre and percent cover of down wood for each watershed. In addition, 50 percent tolerance levels for certain species that use snags are also displayed. These tolerance levels indicate the density of snags per acre that 50 percent of individuals in the population of a species would use within this habitat type, while the other 50 percent would use a higher amount. For example, 50 percent of fringed myotis (bats) in the population would use habitat with approximately 33.2 snags per acre while the other 50 percent would use habitat with more snags per acre (Figure 1).

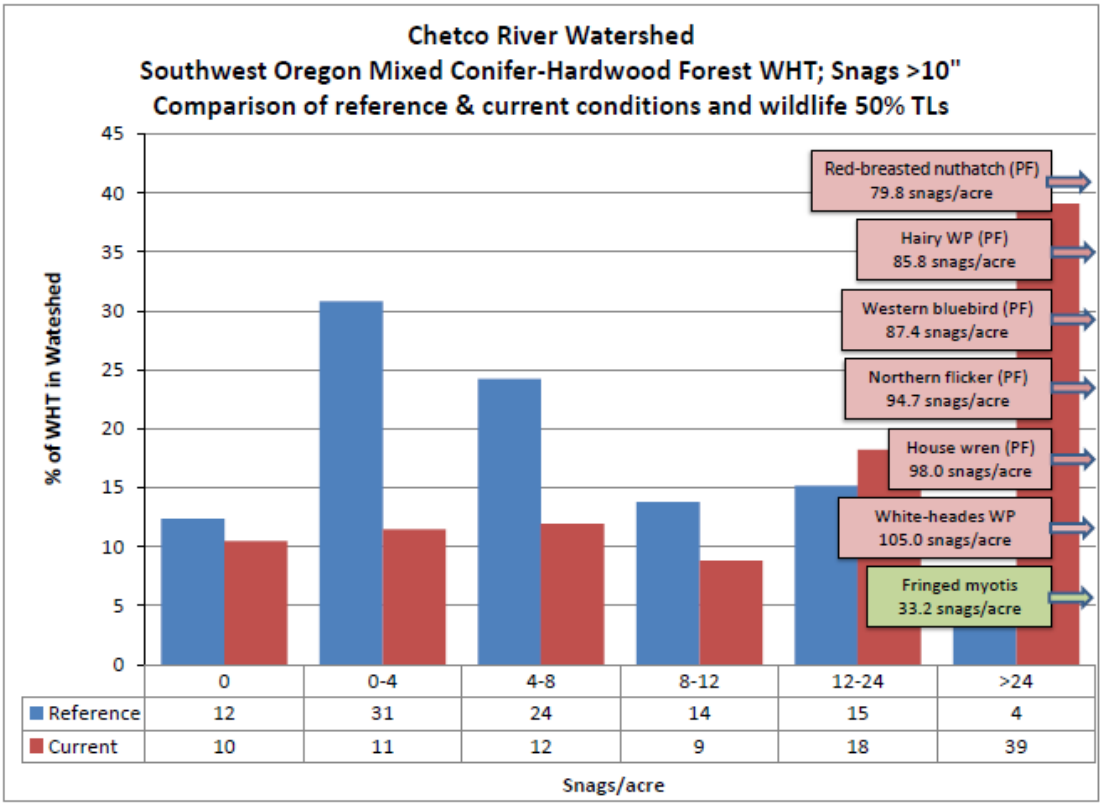
Chetco and Pistol River Watersheds

The 2017 Chetco Bar fire is the largest fire to burn in the Chetco and Pistol River 5th field watersheds since the 2002 Biscuit Fire. RAVG fire severity mapping estimates approximately 25 percent of the Chetco watershed burned with 75-100% basal area mortality and 12 percent with 50-75% mortality. For the Pistol River watershed, approximately 5 percent burned with 75-100% mortality and 3 percent with 50-75% mortality. These areas currently contribute to the largest concentrations of dead wood in these watersheds shown in Appendix D, Maps 2 and 5.

Snag Distribution

Inventory data prior to the fire suggest that the Chetco River watershed was 11 percent deficient overall in snags per acre than reference conditions, although it had 3.5 times more area with over 24 snags per acre (15 vs 4 percent). After the fire (Figure 1), the watershed now has 2 percent more area with snags >10 inches diameter than reference, and nearly 10 times more area with more than 24 snags per acre than reference condition (39 vs 4 percent) potentially providing suitable habitat for bat roosts and cavity-nesting birds (Appendix D, Maps 1-2).

Figure 1. Post-fire distribution of all snags > 10" diameter per acre within the Chetco River fifth-field watershed.



Inventory data for large snags (>20 inches diameter) prior to the fire suggest the Chetco River watershed was 23 percent deficient in area with large snags than reference conditions (51 vs 28 percent area with no snags) with deficiencies in all ranges of snag density (Figure 2). The post-fire distribution of large snags for the Chetco River watershed displayed in Figure 3 suggests the watershed is now 12 percent deficient in large snags overall than reference conditions. Note that this deficiency is in area with fewer than 6 snags per acre, whereas the watershed now has nearly 4 times more area with more than 6 snags per acre than reference conditions and potentially provides more suitable habitat for cavity nesters and bat roosts (Appendix D, Maps 3-4).

Figure 2. Pre-fire distribution of large snags per acre within the Chetco River fifth-field watershed.

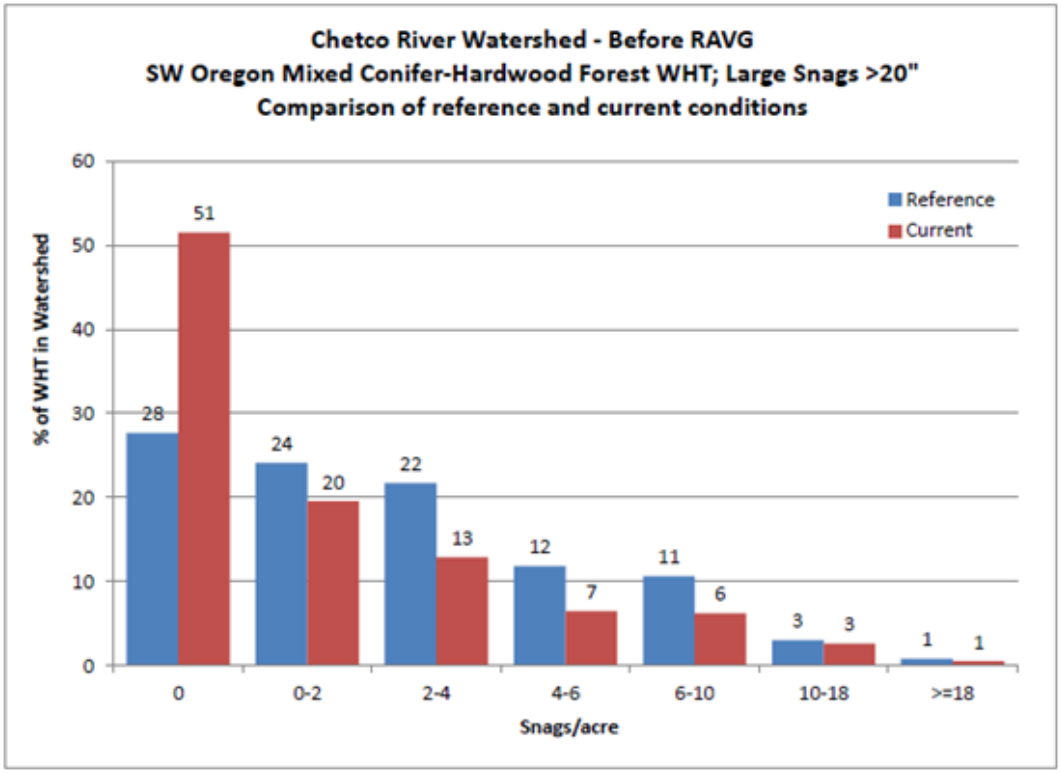
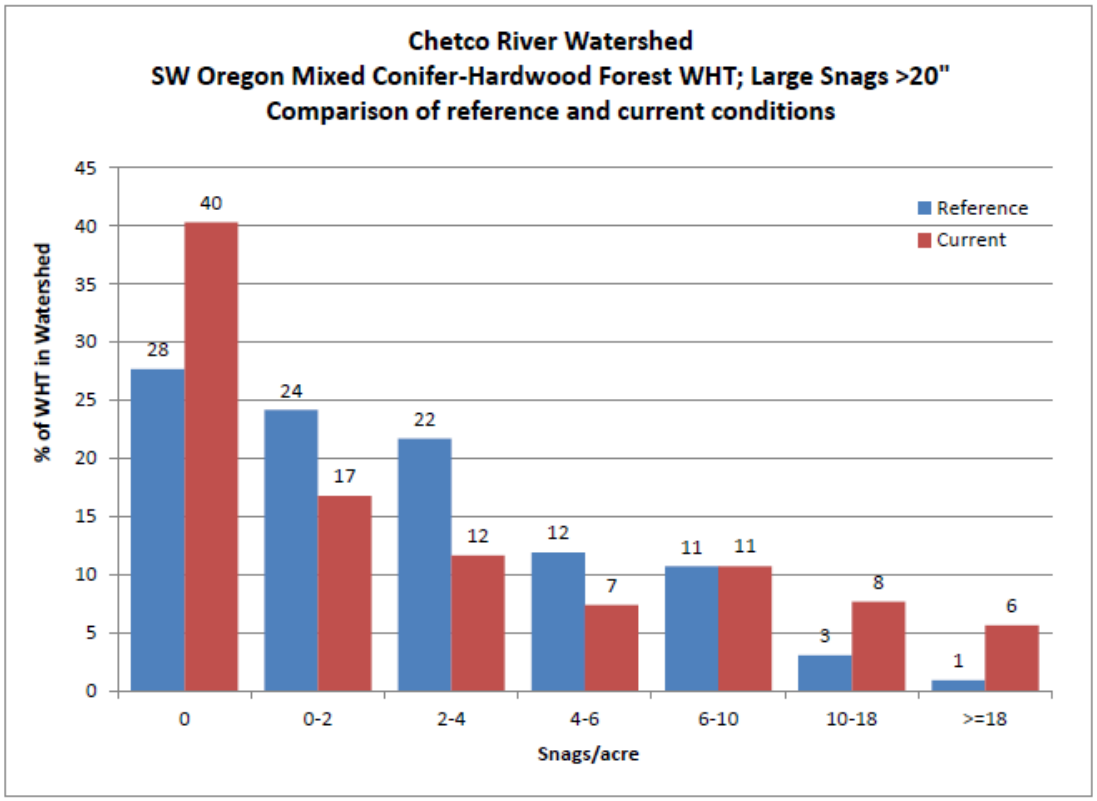


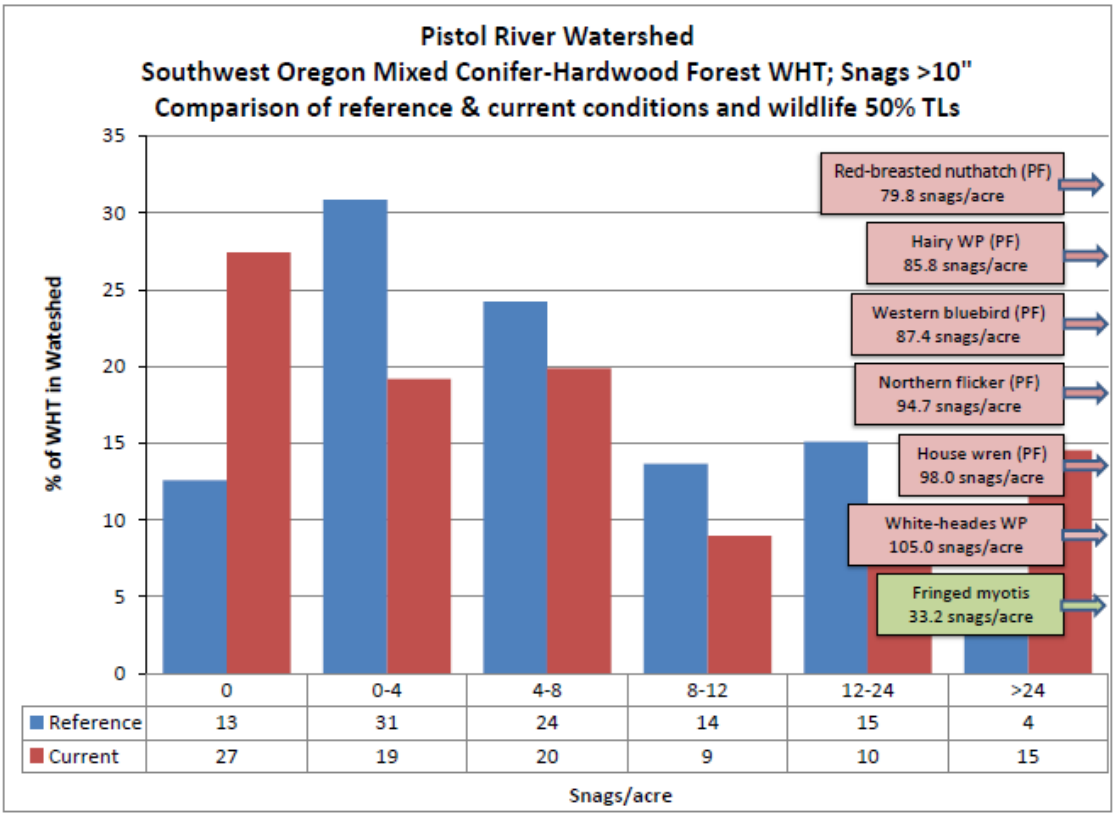
Figure 3. Post-fire distribution of large snags per acre within the Chetco River fifth-field.



Snag distribution for the Pistol River watershed prior to the fire was 20 percent lower than reference conditions for snags greater than 10 inches diameter, however it had two times more area with over 24 snags per acre (8 vs 4 percent). After the fire, the overall margin of deficiency was reduced to 14

percent (27 vs 13 percent, Figure 4). Though the watershed is still deficient in area with lower densities of snags, it now has nearly 4 times more area with over 24 snags per acre, and potentially provides more suitable habitat for bat roosts and cavity-nesting birds.

Figure 4. Post-fire distribution of snags >10 inches diameter per acre within the Pistol River fifth-field watershed.



Furthermore, pre-fire inventory data suggest the Pistol River watershed was 27 percent lower than reference in area with large snags (>20 inches diameter), with deficiencies in all snag densities. After the fire, that margin of deficiency was reduced to 25 percent (53 vs 28 percent, Figure 5). Though it is still deficient in area with lower densities of large snags per acre, it now has two times more area than reference condition with over 18 large snags per acre and potentially provides more suitable habitat for bat roosts and cavity-nesting birds.

Figure 5. Post-fire distribution of large snags (>20 inches diameter) per acre within the Pistol River fifth-field watershed.

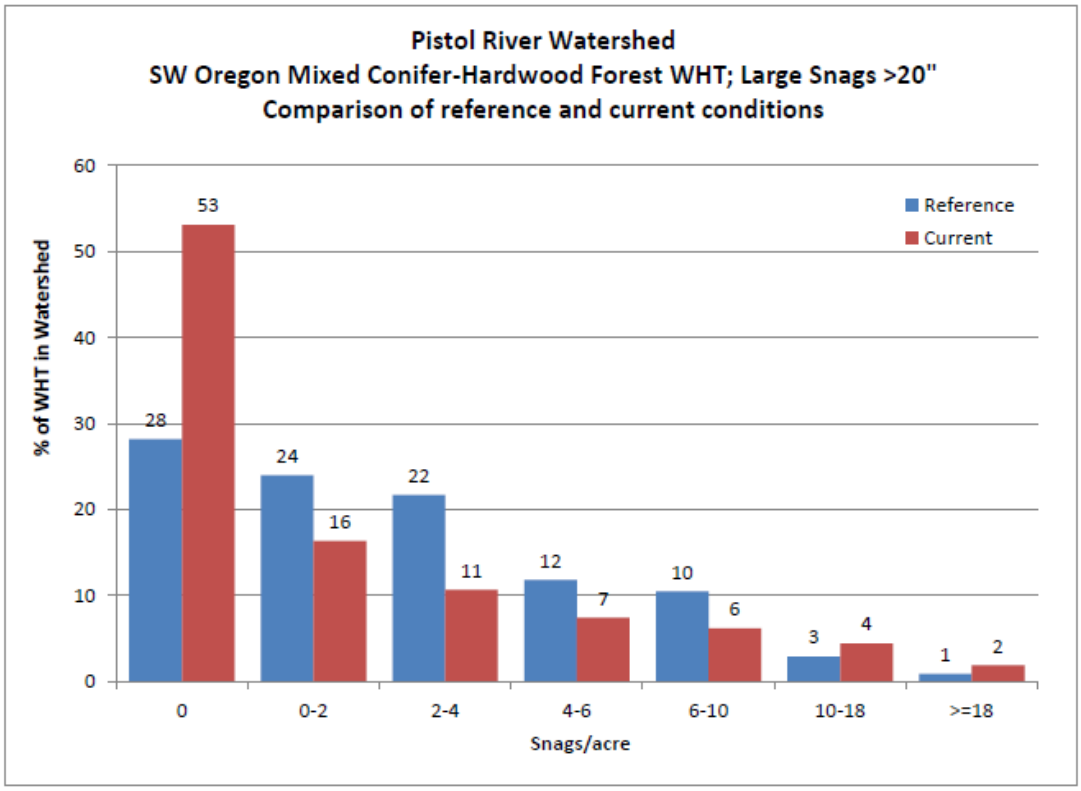
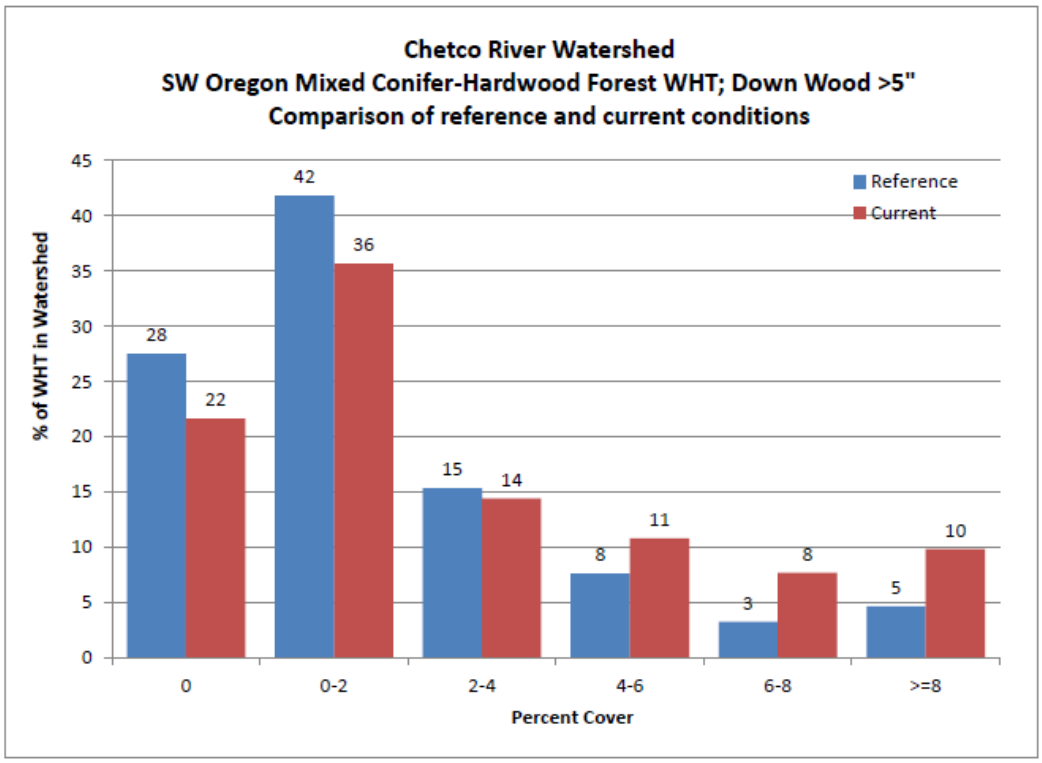


Figure 6 compares reference and current distributions of all down wood greater than 5 inches diameter in the Chetco River watershed. Down wood distribution is represented by percent cover which represents the abundance of down wood in an area providing cover for wildlife species.

Overall, the Chetco River watershed currently has more down wood than the reference condition indicated by the amount of the watershed with 0 percent cover (22 vs 28 percent). This is due to the amount of the watershed that now has more than 4 percent cover. Appendix D, Map 5 displays the current distribution of down wood greater than 5 inches at the large end throughout the Chetco and Pistol River watersheds.

Figure 6. Distribution of down wood > 5 inches diameter per acre by size class within the Chetco River fifth-field watershed.



Down wood is greater than 20 inches diameter is used by fisher and marten. Figure 7 compares the distribution of large down wood between current and reference conditions in the Chetco River watershed. Overall, the watershed is a little lower in large down wood cover than reference conditions. Appendix D, Map 6 displays current distribution of large down wood.

Figure 7. Distribution of large down wood by percent cover within the Chetco River fifth-field watershed.

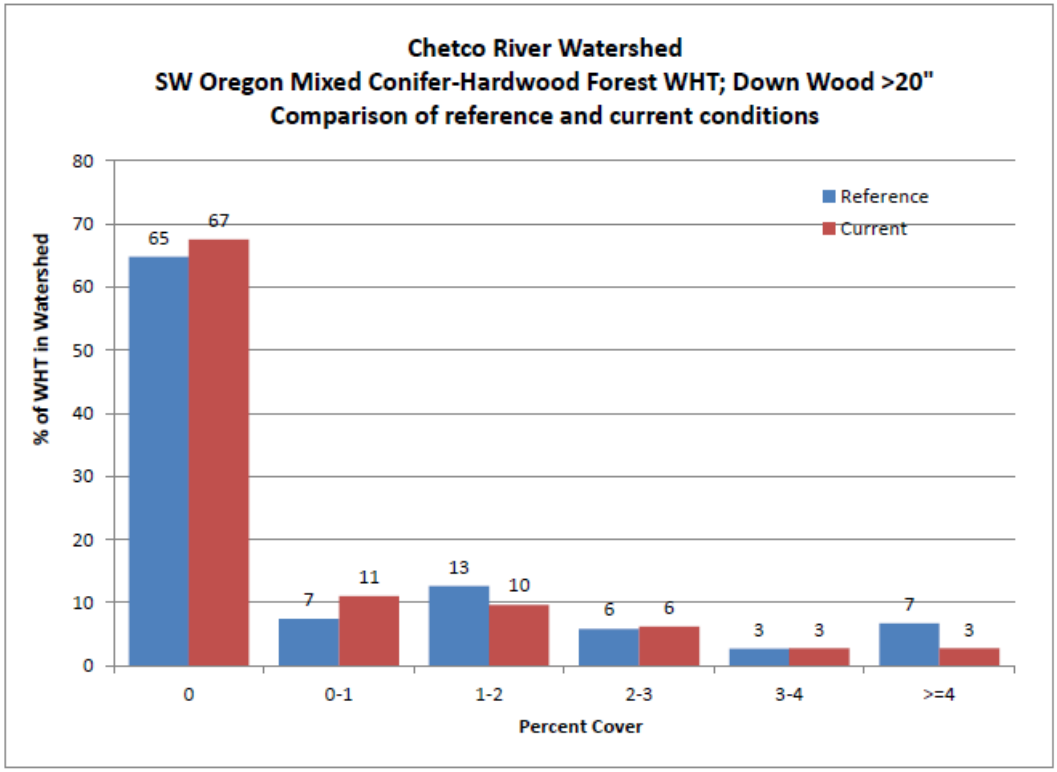


Figure 8 compares the reference and current distribution of all down wood greater than 5 inches diameter in the Pistol River watershed. Overall, the watershed has a higher amount of down wood with less of the area having zero cover (22 vs 28 percent of the watershed). The Pistol River watershed now has 4 times more down wood with higher percent cover than reference.

Figure 8. Distribution of down wood > 5 inches diameter per acre by size class within the Pistol River fifth-field watershed.

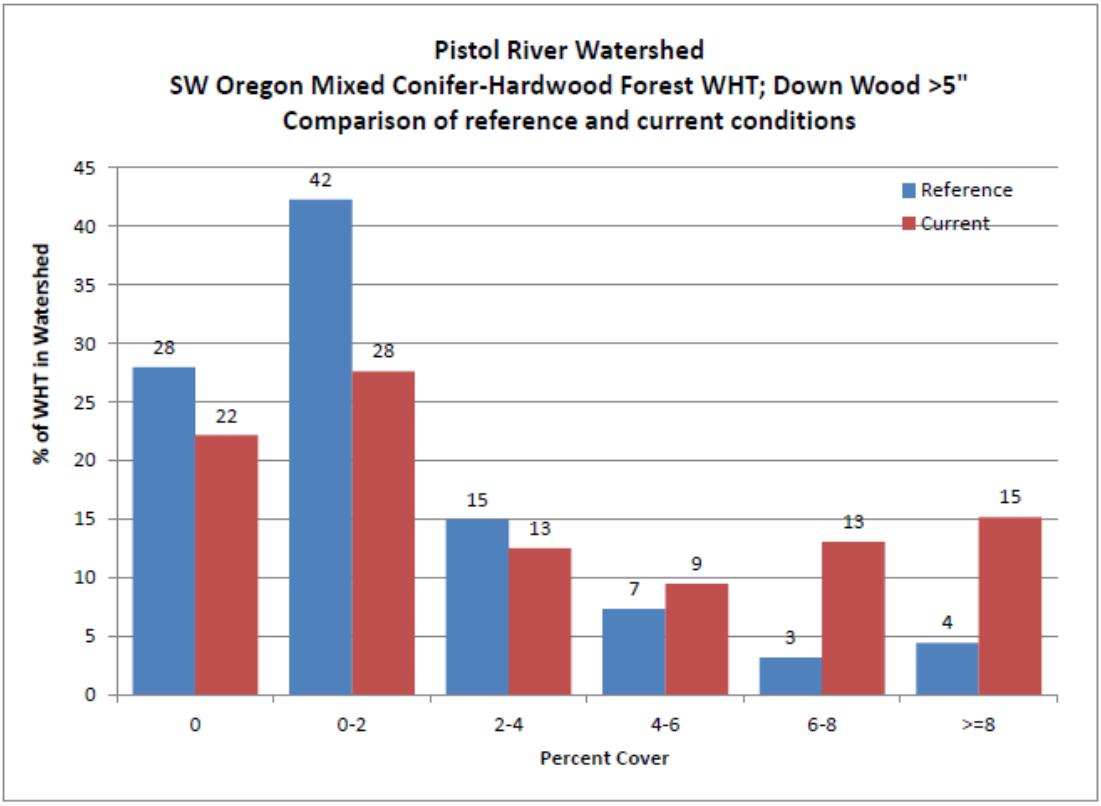
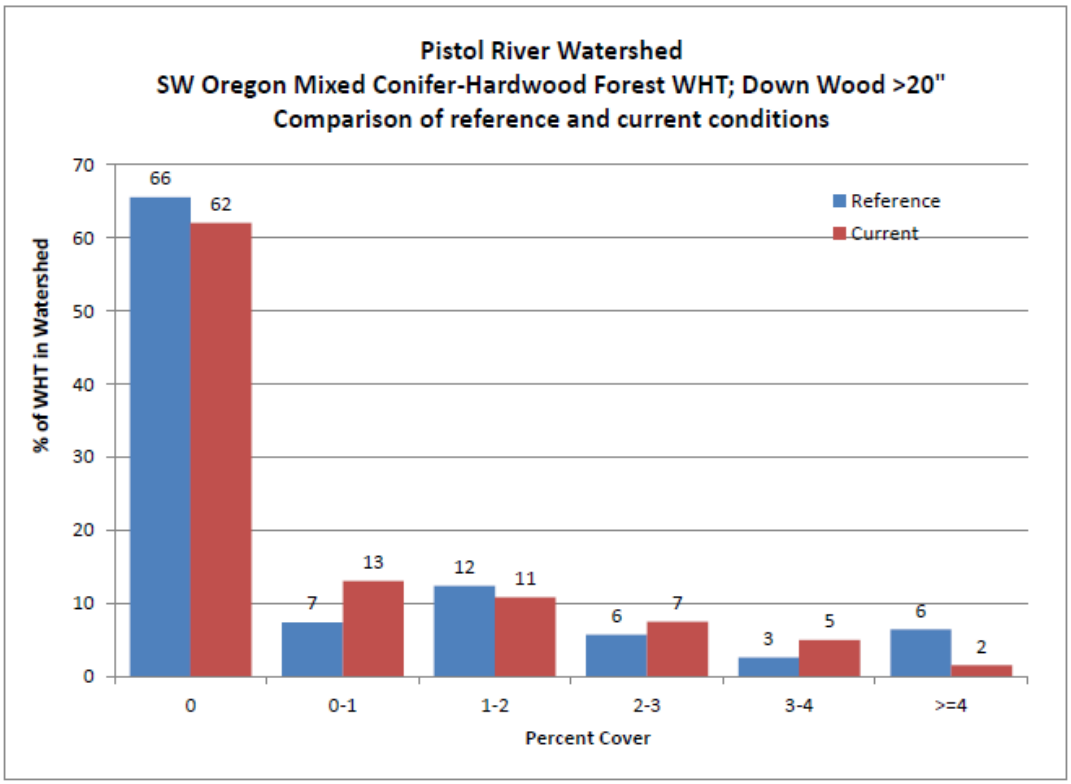


Figure 9 compares the distribution of large down wood (greater than 20 inches diameter) between current and reference conditions for the Pistol River watershed. Overall, the watershed has a little higher amount of large down wood than reference conditions, but is lower than reference conditions in large down wood above 4 percent cover (2 vs 6 percent).

Figure 9. Distribution of large down wood by percent cover within the Pistol River fifth-field watershed.



Site Specific Dead Wood

Project units would affect areas in the watersheds with more than 18 snags per acre (20 snags per hectare, Appendix D, Map 2). Down wood in both watersheds is higher than reference except for areas with greater than 4 percent cover of large down wood. Areas next to roads where danger trees have been felled and left, and where trees were cut for control line preparation during the fire have higher concentrations of down wood. Snags are expected to continue to accrue in and adjacent to the proposed units due to delayed stress response from fire effects, and down wood will also increase as snags decay and fall.

Guidelines for stand level retention of snags is based on Forest Plan direction supplemented by best available science. The DecAID tool and dead wood management guidance developed for Region 6 is a synthesis of applicable scientific literature about snag and down wood use by wildlife for a given habitat type. Current information in DecAID for dead wood in southwest Oregon mixed conifer-hardwood is the same or surpasses Siskiyou Forest Plan Standards and Standards and Guidelines for Matrix in the NWFP. DecAID advises managing the distribution of dead wood for a landscape (e.g. watershed) to reach general natural conditions that mimic the distribution of unharvested acres (i.e. reference condition). For both snags and down wood it is desirable to provide a combination of aggregations and more widely spaced pieces throughout stands to benefit wildlife. For down wood, it is recommended to leave higher amounts where fire is less likely to consume it and where it would not produce a fuel problem. This is typically on north and east aspects and on the lower 1/3 of slopes (Skinner 2002).

Guidelines for retention of large snags to provide structure for northern spotted owl post fire foraging habitat and future NRF habitat are stratified by the distance from existing NRF (e.g. burned NRF within 500 feet of existing NRF is more likely to be used by foraging owls for a number of years), and the topographic position of the burned habitat on the landscape which influences habitat suitability (e.g. ridgelines are less likely to be used for nesting than lower slopes). This project design criteria is described in detail in Appendix A.

Given that the fire area in the Chetco and Pistol River watersheds is contributing to higher densities of snags and down wood (except for > 4 percent cover of large down wood), the fire area outside of proposed treatment units and haul route danger tree abatement would continue to provide areas of high snag density to support wildlife associated with post-fire habitat.

The DecAID advice for southwest Oregon mixed conifer-hardwood habitat consisting of small to medium trees was considered for snag retention to meet 30 percent tolerance levels of an unharvested landscape composition. This includes leaving 4 snags greater than 10 inches dbh per acre, of which 2 are greater than 20 inches dbh (DecAID figures SWOMC_S.inv-14, SWOMC_S.inv-15). This lower density is more suitable for drier parts of the landscape with topographic position more prone to fire. DecAID also recommends including hardwood snags in the retention mix. Compared to the Siskiyou Forest Plan Standards and Guidelines (pp IV-34 thru 35) snag requirements per 100 acres for the most common species of woodpeckers on the Forest, the DecAID snag density recommendations are two times higher than those in the Forest Plan (400 snags/100 acres vs 185 snags/100 acres). The DecAID recommendations also exceed recommendations in the Chetco and Pistol River watershed analyses and the Siskiyou Supplement Guidelines with the addition of 2 snags per acre that are at least 10 inches dbh. In PFF habitat, focus on retention of legacy snags first (see flow chart in Appendix A), then add additional snags as described below to meet 4 snags per acre retention for the unit.

In order to maintain 30 percent tolerance levels based on best available science in these matrix stands (outside of northern spotted owl post-fire foraging habitat in NSO core areas, home ranges or critical habitat), project units will retain aggregates and individual snags where feasible to meet 4 snags per acre greater than 10 inches with 2 snags per acre larger than 20 inches dbh where available. These should include hardwoods where available. Snag retention should be a priority near unburned edges, rock outcrops, riparian avoidance areas or remaining individual or clumps of green trees.

As described previously, the Chetco and Pistol River watersheds overall have more down wood cover than reference (unharvested) conditions (Figures 6 and 8, Appendix D, Map 5). Given that the proposed units comprise 2 percent of these watersheds combined and the remainder will provide higher levels of down wood than reference conditions, the DecAID recommendations for down wood to maintain the 30% tolerance level for wildlife were considered, which is 1.4 percent cover in areas with low to moderate-severity fire regime (DedAID figures SWOMC_S/L.sp-10 and SWOMC_L.inv-10).

In comparison, the Siskiyou Supplement down wood guidance is based on potential vegetation plant series which is more refined than the DecAID habitat types. This project is almost entirely within the tanoak plant series with a small amount of the dry Douglas fir series. For tanoak, the down wood guidance is 0-39 pieces per acre (20 inch diameter at large end by 20 foot long) with a mean of 10 pieces per acre. For dry Douglas fir, the guidance is 0-15 pieces per acres with a mean of 5 pieces per acre. A conversion of pieces per acre to percent cover is provided in the DecAID guidance (https://apps.fs.usda.gov/r6_decaid/views/why_down_wood_percent_cover.html#tbl7).

To achieve the DecAID recommended 1.4 percent cover with logs 20 inches diameter at large end by 20 feet long would take approximately 19 pieces per acre, however it's not required by the Forest Plan that every acre meets this, or necessarily desired that all down wood cover be one size. One way to meet both the Forest plan requirement and current down wood guidance would be to leave ten 20 inch diameter pieces (0.72 percent cover), then add smaller diameter down wood to reach 1.4 percent cover which may include hardwood (e.g. forty 20-foot pieces of 6 inches diameter at large end = 0.7 percent cover). The Forest Plan states that retained snags may contribute towards down wood levels. This will obviously be site specific depending on what sizes and quantities of material are available and consider that retained snags will also contribute to future down wood.

Desired down wood retention for wildlife is to protect existing large down wood and add wood (including retained snags) to meet the Siskiyou Supplement Standards for tanoak and

dry Douglas fir plant series (10 pieces of down wood 20 inches at large end and 20 feet long, 5 pieces of down wood of same size in Douglas-fir series); and add smaller down wood to meet 1.4 percent cover where possible. Down wood retention should be a priority near unburned edges, rock outcrops, riparian avoidance areas or remaining individual or clumps of green trees.

5.2. Species Potentially Impacted by the Project

Federally Listed or Proposed Species

Two species listed under the Endangered Species Act are known to occur within the project area: marbled murrelet (threatened) and northern spotted owl (threatened).

Northern Spotted Owl

A full description of northern spotted owl identification, range, habitat and life history can be found in the final rule designation critical habitat at: http://www.gpo.gov/fdsys/pkg/FR-2012-12-04/pdf/2012-28714.pdf. Relevant background information is summarized here.

Legal status - The spotted owl was listed as threatened in 1990 due to widespread loss and modification of suitable nesting habitat (USDI Fish and Wildlife Service 1990).

Critical habitat – Approximately 28,002 acres of critical habitat subunit (CHU) KLW 3 (Klamath West, subunit 3) overlap the action area. Of these acres 3,734 are PFF habitat. These acres in combination with existing NRF and dispersal provide similar physical and biological features (large snags) to critical habitat making up 18,039 acres of the KLW3 in the action area and 73,707 acres of the entire KLW3 Additional details of this critical habitat subunit are included in the project BA and BO, and the full designation of critical habitat can be found in Federal Register notice Vol. 77, No. 233 at http://www.gpo.gov/fdsys/pkg/FR-2012-12- 04/pdf/2012-28714.pdf.

Threats – The project area is entirely within the Oregon Klamath Province and as mentioned previously, severe wildfire is considered the greatest current threat to owl habitat in the Klamath Province. In addition competition from barred owls is also considered one of the most pressing threats to the spotted owl. Disease and the effects of climate change were identified as potential threats (USDI Fish and Wildlife Service 2011b).

Population and habitat trends –Recent range-wide meta-analysis for data through 2013 showed a range-wide, spotted owl population decline of 3.8 percent annually and an overall decline in occupancy rates in Oregon (Katie M. Dugger et al. 2016). The realized population decline in Oregon since 1990 is from 31 to 64 percent. Dugger et al. also indicated that barred owl presence is having a strong positive effect on overall NSO extinction rates and a strong negative effect on colonization rates in some areas. The 2015 NWFP 20-year monitoring report estimate a net decrease of 6.7 percent in nesting/roosting habitat on federal lands in the Oregon Klamath Province since 1993 (Davis and others 2016). The decrease takes into account the loss of habitat to wildfire, timber harvest, insects and other causes; with some of those losses offset by forest succession. For this province, wildland fire accounted for 9 times more acreage lost than timber harvest. Dispersal habitat also had a net loss of 4.4 percent on federal lands with a similar degree of habitat loss due to wildfire.

Survey history –Protocol **s**urveys of remaining suitable nesting habitat (NRF) in the project area are scheduled for the 2018 breeding season. For the purposes of this analysis, known sites and unsurveyed NRF habitat will be assumed to be occupied and project design criteria to minimize impacts to spotted owls are described in Appendix A.

Description of suitable owl habitat – In the Oregon Klamath Province, owl dispersal-only habitat is forest stands with average tree diameters are ≥ 11 inches DBH, canopy closure is ≥ 40 percent and there is enough open space beneath the canopy for an owl to fly through. Nesting, roosting and

foraging (NRF) habitat for owls is generally older than 80 years with average tree diameter of 21 inches DBH, basal areas between 180 and 240 square feet/acre and canopy closure ≥ 60 percent. NRF habitat also serves as dispersal habitat and contains adequate dead wood to support owl prey species; such as, northern flying squirrels, red tree voles, wood rats and other small mammals.

Post Fire Foraging (PFF) for the northern spotted owl is NRF that has burned at moderate to high intensity and may include occasional individual or small clumps of green trees but for the most part are completely stand replaced and no longer function as nesting or roosting habitat, nor do they provide enough canopy cover for functional dispersal habitat. However, recent studies have shown that spotted owls may continue to utilize this habitat post fire. This is likely incumbent on the patch size of this habitat and its relationships to known owl sites, juxtaposition on the landscape, and other factors. There are differences in the spatial arrangement of spotted owl habitat, locations of activity centers, burn severities and scales of this type of habitat. Comprehensive analyses of the long-term effects of fire on use and occupancy within a landscape, especially the small scale effects to pairs or individuals, are limited. Recognizing these variations in study area conditions and methodologies, the best available literature indicates that NSOs may to some degree, use burned areas that were previously habitat, for nesting, roosting, and/or foraging, depending on the complex interaction of factors such as habitat quality pre-and post-fire, location of the burns in relation to NSO core use areas, and the size, severity, and patterns of the burn.

For this analysis, the Forest stratified PFF based on factors that influence the likelihood of use by owls. Primary PFF (PFF1) is post-fire foraging within 500 feet of existing NRF having high relative habitat suitability (RHS) which more likely to be used by foraging owls than secondary PFF (PFF2) which is beyond 500 feet from existing high RHS NRF. This is based on a study of the Timbered Rock fire in southern Oregon by Comfort et al. 2016 which evaluated the likelihood of post-fire habitat use by NSO based on the degree of contrast between edges of burned and unburned habitat within 90m (approx. 300ft) along those mapped edges. This study found that NSO favored "diffuse" edges of low and mixed-severity fire rather than abrupt edges of high severity fire. In this action area, PFF1 represents an estimate of the diffuse edges in the action area. This stratification accounts for the degree that the PFF contributes to habitat fitness (survival and reproduction) of NSOs at least in the short-term.

For example, PFF2 is characterized as patches of NRF burned at with moderate to high severity and have considerably reduced important habitat components (i.e. lack of stand structure, diversity, cover, or heterogeneity) which may have been the condition of the stand prior to the fire influenced by abiotic factors such as aspect or slope position which also favor a high severity fire regime (Skinner 2002). PFF1 is characterized as patches of NRF that burned at moderate to high severity, but are interspersed in a mosaic of mixed severity and unburned habitat (within 500 ft of existing NRF) and could still be utilized by NSOs.

There is much debate currently on the value of PFF to spotted owls, and the effects of salvage in burned habitat on owls. For a summary of research into the use of PFF by owls, and owl habitats see Bond et al. 2009, Clark 2007, Clark et al. 2011, Clark et al. 2013, Elliott 1985, Eyes et al. 2017, Gaines et al.1995, Jenness et al. 2004, King et al. 1998, Lee and Bond 2015a, Lee and Bond 2015b, Roberts et al. 2011, Jones and Peery 2018, Ganey et al. 2017, and Hansen et al. 2018.

Furthermore, the MAXENT relative habitat suitability model described in the Recovery Plan was used to evaluate the abiotic suitability of a site for NSO nesting and PFF habitat. For example, NRF habitat on ridgelines is generally considered low quality nesting habitat for spotted owls. Owls are not known to nest on these ridges; they tend to be warmer, drier and more exposed than drainages and northerly aspects commonly occupied by NSO. Conversely, efforts are made to conserve important habitat elements such as large snags and down wood in PFF habitat that is located on lower slope-positions and in drainages.

Owl habitat within Chetco Bar Fire Salvage Project Action Area

The Chetco Bar Fire Salvage Project NSO Action Area is the area within 1.3 miles of proposed

treatment units plus any home ranges that are affected by project activities (Appendix F, Map 1). This distance represents the approximate home range distance of northern spotted owls in the Oregon Klamath province. The NSO Action Area is 76,576 acres of which 82 percent is the RRSNF, 3 percent is managed by BLM, and 15 percent is private individual or company land.

Approximately 28 percent of RRSNF lands in the NSO Action Area is spotted owl NRF habitat, 19 percent is dispersal-only and 14 percent is PFF. Furthermore, 44% of NSO habitats on RRSNF (capable, dispersal, NRF, PFF) in the NSO Action Area are in reserved land allocations (e.g. LSR).

The 2011 Revised Recovery Plan for the Northern Spotted Owl provides considerations and guidelines when designing post-fire management projects. Specifically, Recovery Action 12 recommends conserving habitat elements that take a long time to develop such as large snags and large down wood (USDI Fish and Wildlife Service 2011b). During the Project planning process, approximately 260 acres of primary PFF habitat were dropped from the proposal in consideration of this recovery action.

Known (historical) owl sites – There are thirteen NSO home ranges within 1.3 miles of proposed salvage units and along haul routes. Of these, eleven overlap portions of proposed units (Appendix F, Map 1).

Habitat (NRF) within the known owl sites is based on the 2014 modified GNN habitat data which was updated for habitat lost to large fires since 2012 (imagery date) and accounts for anticipated loss of PFF habitat from roadside danger tree abatement in the Chetco Bar fire area. Table 5 displays the current NSO habitat data for sites affected by the project. Minimum NRF thresholds for owl site viability are 50 percent for the core area and 40 percent for the home range (Courtney and others 2004; Thomas and others 1990). None of the thirteen core areas or home ranges currently have minimum habitat for viability and are less likely to support successful NSO reproduction and fledging. However, NSO are known to have high site fidelity even after fires, and it's possible that individuals or pairs may shift their activity centers to larger patches of NRF remaining in the vicinity of their historic site. Surveys to be conducted in the 2018 breeding season are expected to provide insight into NSO occupancy of remaining habitat.

Table 5. Acres of NRF within potentially affected owl site nest patch (70 ac), core area (500 ac) and home ranges (3398 ac) in the Chetco Bar Analysis Area.

Owl Site #	Acres of NRF and PFF (% of Nest Patch, Core Area, Home Range)					
	Nest Patch NRF	Nest Patch PFF	Core Area NRF	Core Area PFF	Home Range NRF	Home Range PFF
98	2 (3)	17(25)	36 (7)	95 (19)	414 (12)	496 (15)
101	34 (49)	0 (0)	200 (40)	15 (3)	793 (23)	323 (9)
102	18 (26)	25 (36)	115 (23)	95 (19)	1148 (34)	360 (11)
128	3 (4)	41 (59)	30 (6)	239 (47)	537 (16)	831 (24)
142	33 (48)	11 (16)	212 (42)	93 (18)	1079 (32)	393 (12)
143	25 (36)	16 (23)	219 (43)	87 (17)	1009 (30)	584 (17)
162	10 (14)	13 (19)	96 (19)	137 (27)	715 (21)	703 (20)
200	14 (20)	35 (50)	112 (22)	92 (18)	975 (29)	385 (11)
256	11 (16)	3 (4)	124 (25)	3 (0)	737 (22)	271 (8)
307	2 (3)	44 (64)	9 (2)	243 (48)	376 (11)	938 (29)
308	14 (20)	1 (1)	144 (29)	4 (1)	1083 (32)	127 (4)
309	29 (42)	3 (4)	199 (39)	10 (2)	1095 (32)	137 (4)
367	34 (49)	18 (26)	200 (40)	124 (24)	1252 (37)	569 (17)

Haul routes – Haul on maintenance level 3, 4 or 5 roads (high use) would not require NSO timing restrictions for disturbance, however maintenance level 1 and 2 roads used for haul within 35 yards of unsurveyed NRF would have timing restrictions for haul unless otherwise noted.

Marbled Murrelet

A more detailed description of marbled murrelet (MAMU) identification, range, habitat and life history can be found in the 1996 final rule designation of critical habitat in 61 FR 102:26256-26320, and the 2011 revised 77 FR 193:615990-61621. Relevant information is summarized here.

MAMU conservation zone: Siskiyou Coast Range Zone 4

MAMU zone: Zone 1 **MAMU survey area**: A – Western Hemlock

Approximate distance from ocean (miles): about 8 miles

Legal status - Murrelets were federally listed as a threatened species in Washington, Oregon and northern California on September 28, 1992 (USDI Fish and Wildlife Service 1992). The final rule designating critical habitat for the murrelet became effective June 24, 1996, and was revised effective November 4, 2011 (USDI Fish and Wildlife Service 2011a).

Critical habitat – None of the proposed salvage units are within designated marbled murrelet critical habitat, however most of them are adjacent to critical habitat (unit numbers OR-07-c and OR-07-d) (USDI Fish and Wildlife Service 2011a). Approximately 0.8 miles of proposed haul route which would include 25 acres of danger tree abatement and 3 proposed landings along existing roads occur along the edge of critical habitat unit OR-07-c.

Threats - Murrelet population decline is largely due to the extensive removal of late-successional and old-growth coastal forests. Primary threats to murrelets are: 1) predation, 2) loss of nesting habitat, 3) by-catch in gill-nets, and 4) oil pollution due to both chronic and major spills (USDI Fish and Wildlife Service 1997). Corvids (crows, ravens, jays, etc.) and rodents are known predators on murrelet eggs and chicks.

Population trends - A decline of nearly 30 percent has been documented in the murrelet population of Washington, Oregon, and northern California between 2000 and 2010 (Miller and others 2012). The draft Northwest Forest Plan 20-year report (1994-2013) for marbled murrelets found the trend was positive for murrelet populations in conservation zone 4 (Gold Beach Ranger District), but the evidence was not conclusive (http://www.reo.gov/monitoring/reports/20yr-report/).

Survey history – No protocol MAMU surveys have been conducted for this project. The project area was included in landscape level protocol surveys to establish the MAMU survey areas between 1988 and 2001 (USDI Fish and Wildlife Service 2002).

Description of suitable murrelet habitat – Murrelet nesting habitat is generally mature forest with or without an old-growth component, but having trees with platform structure of at least 4-inches in diameter. Platforms can be branches with or without moss and lichens, witches brooms, mistletoe or other deformities. Murrelets are known to have occupied smaller patches of habitat within areas of unsuitable habitat. Forest within 0.5 mile of individual trees with nesting platforms having a canopy height of at least one-half the site potential is considered a physical and biological feature essential for murrelet nesting.

Murrelet habitat within the project area – Proposed units do not contain suitable habitat for marbled murrelets. Any living trees in these units either do not have platforms, or do not have adequate surrounding forest canopy to provide cover over potential suitable platforms. NSO NRF is used by the forest as a surrogate for estimating suitable habitat, as mentioned previously approximately 28 percent of the area within 1.3 miles of proposed units including entire NSO home

ranges that overlap units (NSO Action Area) may provide suitable habitat for MAMU.

Known murrelet occupied sites – Portions of occupied sites burned with moderate to high severity no longer provide suitable habitat for MAMU, and the burned habitat is no longer considered occupied. A total of 9.6 acres ranging from 0.5 to 5 acres of units #147, 149, 160 and 165 overlap these burned areas. Existing occupied sites are within disturbance distances of four additional units #144, 145, 146 and 167 (Appendix F, Map 2).

Haul route – Proposed haul routes travel through and within disturbance distances (120 yards) of suitable habitat. Many are on high-use roads (maintenance level 3, 4, and 5) and those that are maintenance level 1 or 2 roads would have MAMU timing restrictions on haul unless otherwise noted.

Region 6 Sensitive Species

The following sensitive species information is derived from more detailed species fact sheets found at the interagency special status/sensitive species program (ISSSSP) website: https://www.fs.fed.us/r6/sfpnw/issssp/planning-documents/species-guides.shtml

Pacific fisher

The geographic distribution of fishers (*Pekania pennanti*) in the Pacific Coast states has been greatly reduced in extent from pre-settlement conditions. Prior to extensive European settlement, the fisher occupied most coniferous forest habitats in Washington, Oregon, and California (Aubry and Lewis 2003). The Rouge River-Siskiyou National Forest has fisher populations in the Siskiyou Mountains and southern Oregon Cascades and recent documented occurrences on the Gold Beach, Powers and Wild Rivers districts.

The fisher is one of the most habitat-specialized mammals in western North America (Buskirk and Powell 1994). Specialization appears to be tied primarily to denning and resting habitats. Rest structures chosen by fishers are often the largest diameter trees available in a particular landscape with a considerably higher canopy closure (≥75%) immediately adjacent to the rest site and include live trees with mistletoe brooms or rodent nests, logs and cull piles, snags, and cavities in both conifers and hardwoods (Aubry and Raley 2006). Den structures in the southwest Oregon can be live trees or snags with openings that access hollows created by heartwood decay or large hollow logs. Both conifer and hardwoods can provide these structures. In an ongoing fisher monitoring study for the Ashland Forest Resiliency Project, natal and maternal dens found since 2012 have been in pine and hardwood tree (e.g. madrone and black oak) cavities with relatively small entrance holes several feet from the ground.

As with resting sites, high canopy closure (80%) within an acre or less of den sites has been shown to be important. (Aubry and Raley 2006) Reduction of canopy closure to below 80% around large live trees and snags that are clumped and large logs where there is a multi-storied stand component likely has the potential to have the most detrimental effect on potential den and rest sites. Since fishers use the largest live and dead trees for den and resting habitats, loss of these structures can also reduce habitat quality for resident animals.

While fishers require structures provided by older aged or residual stands for denning and resting, they appear to use a broad array of stand conditions for foraging from stands with high volumes of coarse woody material, to pole-sapling forestes, edge habitats and gaps in forest cover with fruit-bearing shrubs and forbs (Weir and Harestad 2003, Jones and Garton 1994). Mammals, birds, reptiles, insects and plants have been found in the diet of fishers (Zielinski et al. 1999, Aubry and Raley 2006). There is some indication of seasonal variation in the fisher's diet which is likely linked to seasonal abundance of prey and forage species.

Riparian corridors (Jones and Heinemeyer 1994) and forested saddles between major drainages (Buck 1982) may provide important dispersal habitat or landscape linkages for fishers. A study of 7

juvenile fisher dispersals in the southern Oregon Cascades found that males dispersed an average of 29 km, and mean dispersal distance of females was 6 km. Two of the 4 females studied did not disperse from their natal areas and appeared to establish home ranges adjacent to and slightly overlapping their mother's home range (Aubry and Raley 2006). The same has been found in the Ashland watershed study.

Current threats for this species include habitat loss to wildland fire, vegetation management that reduces key habitat features, and use of poisons (anticoagulant rodenticides) in illegal marijuana grows on public lands.

A large, long-term study conducted by the Pacific Northwest Research Station and Oregon State University to determine the extent and range of fisher and marten in coastal Oregon documented fisher presence within the Chetco River watershed in 2017 prior to the Chetco Bar fire.

Pacific Marten (coastal population)

Much of the information below is summarized from the U.S. Fish and Wildlife Service's finding on the Pacific marten (*Martes cuarina*) within coastal Oregon and northern California (also known as the Humboldt marten) (April 7, 2015: 80 FR 18742-18772). That document contains a detailed description of the species, its habitats and potential threats to the species. It is available on the internet at: *http://www.regulations.gov* at Docket Number FWS–R8–ES–2011–0105.

The American marten was historically recognized as a single species occurring across a broad range of North America. In 2012, the Pacific marten was split from the American marten based on genetic and morphological differences (Dawson and Cook 2012). The Pacific marten occurs largely in montane and coastal coniferous forest west of the Rocky mountain crest. There are two subspecies of Pacific marten recognized in Oregon. One in the coast and cascades range, and the other in the Blue Mountains of northeast Oregon. The Chetco and Pistol River watersheds are within the historic range of the coastal Oregon population of the Pacific Marten.

Marten tend to select for mature and old conifer forest with high stand complexity including dense shrub layers and high amounts of large down wood. These habitat characteristics provide foraging and cover advantages in their ability to be concealed from prey and predators. (USFWS 2015). They are preyed upon by larger mammals such as fox, bobcat, coyote and fisher. Martens consume a variety of prey including chipmunks, small birds, reptiles and even berries. Resting structures include large-diameter live trees, snags and down logs. When these structures contain cavities, denning habitat is also available. (80 FR 18747) Within the coastal southern Oregon population area, 44 percent of the federal and state lands are in moderate or high suitability marten habitat. (80 FR 18769)

Currently there are no data with which to estimate the abundance or a population trend for the coastal population of marten; however, strategic surveys began in 2014 and continued through 2017 for a large, long-term study conducted by the Pacific Northwest Research Station and Oregon State University to determine the extent and range of the marten population in coastal Oregon. It includes DNA analysis from hair samples to expand knowledge of the coastal population's relationship with the northern California subspecies (*Martes caurina humboldtensis*). Prior to the Chetco Bar fire in 2017, these surveys documented fisher presence within the Chetco River watershed and marten presence in the southeast corner of Curry County and locations north of the Pistol and Chetco watersheds in Curry County.

Bald eagle

Associated with mature conifer forests and nest within sight-distance of large bodies of water (generally within one mile). Bald eagles generally build stick nests near the top of large, live conifer trees, and often reuse nests year-after-year. Eagles forage largely on live and dead fish and water fowl, and mammals to a lesser degree. Human disturbance can interrupt foraging and nesting, but nests show some tolerance where there are high levels of human activity. Eagles often

use large snags for perching to rest and hunt.

Activities which could disturb bald eagles at active or inactive nests, or interrupt roosting or foraging, are regulated under the Bald and Golden Eagle Act (available at https://www.fws.gov/pacific/eagle/). *National Bald Eagle Management Guidelines* apply when activities could be seen from or disturb a bald eagle nest during the eagle breeding and fledging season which occurs approximately January through August in Oregon (USDI Fish and Wildlife Service 2007).

There are no known nest sites within the Chetco or Pistol river watersheds, however bald eagles have been observed frequently throughout the Chetco watershed. It is likely that unknown nests may be present in either watershed within one mile of Chetco or Pistol rivers. These major rivers and their lower tributaries are also year-around foraging areas. There are no known areas where eagles congregate to roost or forage within the analysis area.

Lewis's woodpecker

Lewis' woodpeckers (*Melanerpes lewis*) are migratory in southwestern Oregon, with sporadically large populations in the winter and scattered breeding pairs in the summer reported. They are mostly associated with open woodland habitat near water. The population of Lewis' woodpeckers has fallen dramatically across Oregon as pine – oak woodlands are lost (Gilligan et al. 1994). A contributing factor in the decline has been the spread of the European Starling, which aggressively out-competes this species for available cavities. Habitat loss is due to a wide variety of concerns that include urbanization of valley floors, fire suppression and encroachment of conifer forests, timber harvest of pine components in the oak forests, etc.

This species is closely tied to open woodlands with ponderosa pine, Oregon white oak, and riparian cottonwood communities. Nests are often in the large Ponderosa Pine snags or mature oaks while the birds forage on insects and acorn meat. In winter they store acorn meat in crevices in trees and power poles. Because this woodpecker does not usually excavate its own cavity, they have a close tie to older snags within the forest that are likely to contain cavities and have crevices for food storage.

Lewis' woodpeckers are documented in the Chetco and Pistol River watersheds.

Purple martin

Purple martins (*Progne subis*) are neotropical migrants, spending the non-breeding season in Brazil and migrating to North America to nest West of the Rockies and in the deserts they largely nest in abandoned woodpecker nest cavities located in the mid-story of the canopy. In the Pacific Northwest, purple martins are known to use gourds and clusters of single-unit boxes for nesting. (Gough et al 1998, PMCA 2006).

Purple martins are aerial feeders with a diverse diet that includes a wide range of flying insects such as dragonflies, damselflies, grasshoppers, moths, wasps, beetles, bees, flying ants, butterflies, and others. (Gough et al 1998, PMCA 2001, PMCA 2006, Sauer and Droege 1992). Purple martins utilizes a wide variety of terrestrial habitats including cropland, hedgerow, desert, grasslands, savanna, shrubland, chaparral, suburban, orchard, conifer woodland and hardwood woodlands. Generally, they inhabit open areas and prefer an open water source nearby (PMCA 2001).

Suitable habitat for this species may occur in the lower parts of the project area along the Chetco river. There are no known sightings of this species in the project area. Nearest citizen sighting is at Harris Beach (Bunn, R. 2017)

Threats to this species include competition with European starlings and house sparrows for nest sites, lack of tree cavities near open water for nesting habitat, and adverse (cool) weather that limits availability of flying insects.

Green sideband

The green sideband (*Monadenia fidelis beryllica)* is the dominant *Monadenia* mollusk species on the west side of the Coast Range from the Pistol River to the Winchuck River (Frest & Johannes 2000). Sidebands are associated with deciduous trees (including alder) and brush in wet, relatively undisturbed forest. One observation was within a planned 80-year old thinning unit of mixed conifer and hardwood.

Sidebands use moist conifer forest, there is a good likelihood that they are present within riparian reserves adjacent to proposed salvage units. There are no known occurrences of green sidebands within the salvage units or the Chetco or Pistol River watersheds; however, no strategic surveys have occurred for the species.

Threats include logging, grazing, road construction and mining.

Western bumble bee

The western bumble bee (*Bombus occidentalis*) was widespread and common throughout the western United States and western Canada before 1998 (Xerces Society 2009). The former range of U.S. states included: northern California, Oregon, Washington, Alaska, Idaho, Montana, western Nebraska, western North Dakota, western South Dakota, Wyoming, Utah, Colorado, northern Arizona, and New Mexico. Unfortunately, since 1998 populations of this bumble bee have declined drastically throughout parts of its former range. Populations of the western bumble bee in central California, Oregon, Washington and southern British Columbia have mostly disappeared. It is difficult to accurately assess the magnitude of these declines since most of this bee's historic range has not been sampled systematically.

The following from Evans et. al, 2008 describes survey efforts conducted in southern Oregon:

"Robbin Thorp has extensively searched several sites in southern Oregon and northern California where *B. occidentalis* used to be common. He has only found one *B. occidentalis* individual since 2002 (Thorp 2008). In yearly surveys of southern Oregon and northern California sites in which a total of 15,573 bumble bees were observed from 1998 to 2007, 102 *B. occidentalis* were observed in 1998, nine in 1999, one in 2000, one in 2001, one in 2002, and none in 2003, 2004, 2005, 2006, or 2007 (Thorp 2008, Figure 9). In 2008, a single *B. occidentalis* specimen was captured on Mt. Ashland in Oregon in a survey that included over 2,000 bees that were caught in blue vane traps (R. Thorp, personal communication, September 2008). An additional 2,000 bumble bees were examined foraging at flowers. No additional *B. occidentalis* were observed, indicating that although present, *B. occidentalis* is still extremely rare."

In 2016, two individual *B. occidentalis* were confirmed by Thorp in a 2-day survey effort of approximately 30 volunteers who examined over 1,000 bees foraging at flowers on Mt Ashland. Bumble bee surveys on the Gold Beach Ranger District were conducted in habitat used by more common bumble bee species in 2015 and 2016. No western bumble bees were observed.

The western bumble bee also uses pre-existing holes such as abandoned rodent holes for nesting. These bees likely use a wide variety of flowering and pollen producing plants as most native bees. Potential habitat in the project area has increased as a result of the Chetco Bar fire where flowering plants and shrubs are regenerating in areas with more sun exposure than before the fire.

Pallid bat

Pallid bats (*Antrozous pallidus*) are known to occur throughout SW Oregon and NW California. Suitable roost habitat types include buildings, bridges, rock outcrops, and large decadent snags with loose bark, particularly associated with xeric sties. They feed primarily on beetles, moths, and other insects and often feed from the ground (from *Land Mammals of Oregon*, Verts and Carraway 1998). Threats include damage or destruction of roost sites and hibernacula. These bats are also sensitive to disturbance around roost sites. Pallid bats are documented on the south end of the Powers Ranger District, but not within the Chetco or Pistol River watersheds.

Fringed myotis

Fringed myotis (*Myotis thysanodes*) also occur throughout SW Oregon and NW California. Most common in drier woodlands (oak, pinyon-juniper, ponderosa pine) but found in a wide variety of habitats including mesic coniferous forest. They commonly roost in crevices in buildings, mines, rocks, cliffs and bridges and are also known to roost in large decadent trees and snags. Beetles and moths are their primary diet. This species has been documented in the South Fork Coquille, Sixes, Chetco River, and Winchuck watersheds.

Survey and Manage (NWFP) Species

See Appendix B for a full discussion of current policy for survey and manage species, including the history of litigation through 2014. Appendix C lists all NWFP species and range. Information is also available at http://www.blm.gov/or/plans/surveyandmanage/.

The Chetco Bar Fire Salvage Project is within the range of the northern spotted owl and Oregon red tree vole. The Project is consistent with the survey and management standards and guidelines in the January 2001 *Record of Decision and Standards and Guidelines for Amendments to the Survey and Manage, Protection Buffer, and other Mitigation Measures Standards and Guidelines* (USDA Forest Service and USDI Bureau of Land Management 2001) and is based on the district court's remedy order issued on February 18, 2014 (*Conservation Northwest v. Bonnie*, W.WA No. C08- 1067-JCC). This remedy order followed after the 9th Circuit Court of Appeals rejected the 2011 Consent Decree executed in resolution of the district court action *(Conservation Northwest, et al v. Harris Sherman, et al and D.R. Johnson Company,* 715 F.3d. 1181, C.A. 9 (Wash), April 25, 2013).

The Project utilized the December 2003 species list which incorporates species changes and removals made as a result of the 2001, 2002, and 2003 Annual Species Reviews with the exception of the red tree vole, *Arborimus longicaudus*. For the red tree vole, the Ninth Circuit Court of Appeals in *KSWC et al. v. Boody et al*., 468 F3d 549 (9th Cir. 2006) vacated the category change and removal of the red tree vole in a portion of its range, and returned the red tree vole to its status as existed in the January 2001 Record of Decision and Standards and Guidelines, which makes the species category C (Appendix C) throughout its range.

The Oregon red tree vole is the only Survey and Manage species present in the project area. There are no documented red tree vole nest sites within proposed salvage units. Red tree voles require stands of live Douglas-fir trees with at least 60 percent canopy cover for nest sites and foraging habitat. Proposed salvage activities would not affect suitable habitat for this species, therefore pre-disturbance surveys are not required.

Management Indicator Species (MIS)

A forest-wide baseline and updated species accounts of management indicator species for the Siskiyou National Forest was produced in 2012 (USDA Forest Service 2012). It includes a full description of each species plus MIS law, regulation and policy. Relevant information is summarized in this document.

Management indicator species represent other wildlife species which utilize a similar habitat type. As such, MIS act as a barometer for the health of various habitats and are monitored to quantify habitat changes predicted in the Siskiyou LRMP (1989 pages IV-10 and 11, FEIS page III-102).

The current MIS species for Siskiyou National Forest and why they were selected are shown below in Table 6. All species have documented occurrence in at least one of the two watersheds and suitable habitat for these species is present in the Chetco and Pistol River watersheds.

Table 6. Management indicator species for the Siskiyou National Forest – wildlife (USDA Forest Service 2012).

Species	Habitat Represented	Why Selected
Bald eagle	Habitat corridors along major rivers	Endangered/Threatened
Osprey	Habitat corridors along large creeks and rivers	Represents Specific Habitat
Spotted owl	Old-growth forest	Endangered/Threatened
Pileated woodpecker, American marten	Mature forest	Represents Specific Habitat
35Woodpeckers	Snags (standing dead trees)	Represents Specific Habitat
Black-tailed deer, Roosevelt elk	Early successional forest stages	Species Commonly Hunted

The amount of habitat on the entire Rogue River - Siskiyou National Forest for the above species updated with 2011imagery is summarized in Table 7 along with preliminary updates from fires across the forest between 2011 and 2017.

Table 7. Comparison of 2011 and 2018 updates for MIS species for the RRSNF.

Species	Habitat in 2011 (acres)	Preliminary Habitat in 2018	Percent Habitat Loss
Bald eagle	39,536	39,536	0%
Osprey	39,536	30,536	0%
Spotted owl NRF	355,467	339,286	4%
American marten den/rest	402,794	382,615	5%
Pileated woodpecker	536,829	511,872	5%
Woodpeckers	656,829	573,899	13%
Deer and elk (thermal/hiding)	762,219	723,501	5%
Deer and elk (forage)	324,926	363,644	+12%

Other Species of Concern

Migratory and Focal Bird Species

Executive Order 13186 (2001) and a 2008 memorandum of understanding with the U.S. Fish and Wildlife Service directs the Forest Service to avoid or minimize adverse impacts on high priority migratory birds and their habitats during agency actions (for full policy description see appendix B).

The U.S. Fish and Wildlife Service published a list of birds of conservation concern (BCC) in 2008 for the northern Pacific forest bird conservation region 5 (BCR5). The full list of BCC species for BCR 5 is in appendix E, Table E-1.

Focal bird species used for this analysis are those which have primary habitat attributes of large snags, edges or post-fire habitats. The concept is described in detail in *Habitat Conservation for Landbirds in the Coniferous Forests of Western Oregon and Washington* (Altman and Alexander 2012). In addition, Partners in Flight published a revised Landbird Conservation Plan for Canada and the Continental United States in 2016. This plan identifies additional species for BCR 5 of high conservation concern and common species in steep decline for which proactive management of habitat and reduction of threats are expected to reverse population declines. The full list of these species that could occur in the Chetco and Pistol River watersheds, and their habitat attributes, is in appendix E, Table E-2.

In addition, the Oregon Department of Fish and Wildlife identified strategy species of birds for the Kalmiopsis Conservation Opportunity Area that were considered in this analysis (http://www.oregonconservationstrategy.org/conservation-opportunity-areas/).

Habitat within the Chetco Bar Salvage project footprint is primarily a mix of fire-killed confer and hardwoods associated with the southwest Oregon mixed conifer-hardwood habitat type described in the dead wood section of this report. Living trees and other vegetation occur primarily within riparian reserves adjacent to proposed salvage units. Any living trees within proposed units would be retained. Shrub species such as evergreen huckleberry have resprouted over the winter as has madrone and tanoak. Large legacy snags would be retained according to project design criteria based on stratification for importance to northern spotted owl habitat and snag densities suitable for dry, fire-prone topography.

Bird species present – The BCC, PIF focal species and ODFW strategy species were reviewed using information about post-fire habitat use from current literature including a study of avian use of post-Biscuit fire habitat (Fontaine 2009). Species that are associated with post-fire habitats are listed in Table 8 below.

Table 8. Birds of conservation concern (2008) or PIF focal species (2012, revised 2016) and ODFW stratey species not covered elsewhere (federally listed, R6 sensitive, MIS) that could be affected by project activities.

Forest Condition	Habitat Attribute	Species
Forest edge	Snags near open habitats	Olive-sided Flycatcher
Mature/young	Open mid-story	Hammond's Flycatcher
Sapling/seedling	Deciduous vegetation	Orange-crowned warbler
Unique	Nectar-producing plants	Rufous hummingbird
Klamath Mts. Mixed Forest	Pine-oak canopy/subcanopy trees	Purple Finch
Klamath Mts. Mixed Forest	Dense shrub understory	Nashville Warbler
Klamath Mts. Mixed Forest	Forest canopy edges	Western Tanager
Klamath Mts. Mixed Forest	Montane brushfields	Fox Sparrow
Klamath Mts. Mixed Forest	Post-fire	Lazuli Bunting
Young Forest/Shrub	Open shrub dominated	Mountain quail
Conifer Hardwood Forest	Mixed conifer and hardwoods	Pine siskin
Young Forest/Shrub	Dense brush/young plantations	Wrentit
Open/Young Forest/Shrub	Open rocky areas near shrublands, forest burns	Common nighthawk (ODFW COA)

Surveys – No systematic, general bird surveys have occurred in the analysis area in the recent past. Christmas bird counts and breeding bird surveys occur regionally within the State of Oregon and information is aggregated and reported on the Partners in Flight (PIF) website at http://www.partnersinflight.org/. PIF maintains a species assessment database which contains detailed information of species at risk, including population trends. Also available on the website is the 2016 *Landbird Conservation Plan* which reports birds vulnerable to extinction and their population trends. Furthermore, citizen observations of birds are documented on www.ebird.org established in 2002 by the Cornell Lab of Ornithology and National Audubon

Society. This database is gaining use by scientists for studying distributions of bird species.

Pollinators

In June of 2014 a Presidential Memorandum was issued to create a Federal strategy to promote the health of honey bees and other pollinators. Federal agencies were tasked with enhancing pollinator habitat on their managed lands, consistent with their mission and public safety. Best management practices for enhancing pollinator habitats have been developed (Xerces Society for Invertebrate Conservation 2015) and would be implemented within the Chetco Bar Salvage Project area, where practical.

Habitat for pollinators is varied and will probably increase as a result of the fire. The best pollinator habitat consists of open landscapes with good sun exposure and many types of native, herbaceous plants (Xerces Society for Invertebrate Conservation 2015). One key is having a variety of plants that produce pollen and nectar from spring through early fall. The Project area includes manzanita, huckleberry, pacific madrone and Oregon grape which all provide nectar and some pollen. Native forbs are available mostly along roadsides and riparian areas and are expected to increase from stored seed banks in the burned area. Depending on the pollinator species present, other important components are dead wood and open soil for nest sites, and open water.

Pollinator species - Appendix C lists all regionally sensitive species considered during our analysis, including several species of butterflies and bumble bees. None of the regionally sensitive pollinator species are documented within the Project footprint, but nectar and pollen habitat exists for more common bumble bees, butterflies, hummingbirds and other pollinators that likely occur within the project footprint.

Surveys – No protocol surveys for any specific pollinators have occurred within the project area.

5.3. Environmental Consequences – Terrestrial Wildlife

Mechanisms for Effects

Following are potential effects to wildlife and their habitat, both negative and positive, that could result from proposed salvage activities. The extent and intensity of these effects will be evaluated for each species identified previously as potentially affected by the project.

- **Cutting and yarding activities**
  - − Disturbance of existing habitat; snags, small patches of living vegetation
  - − Incidental destruction of existing down wood
  - − Felling and removal of existing snag habitat
  - − Direct mortality from equipment, snag felling and yarding.
  - − Noise disturbance
- **Pile burning**
  - − Smoke disturbance during breeding season.
  - − Direct mortality from burning (e.g. mollusks, insect larvae)
  - \+ Reduced fuel loading
- **Temporary road and landing construction or reconstruction**
  - − Localized habitat removal/modification
  - − Noise disturbance
- **Hauling of removed material**
  - − Noise disturbance
- **Revegetation site prep and planting**
  - − Localized habitat disturbance, removal, or modification

Background for Cumulative Effects

A detailed list of past, present and reasonably foreseeable actions in the watersheds is available in the Project EA. Approximately 78 percent of Chetco River and 52 percent of the Pistol River watersheds are NFS lands managed by the Gold Beach Ranger District. Approximately 10 percent of the watersheds combined are composed of managed stands with some level of past timber harvest.

Chetco Bar Fire Suppression Activities included approximately 58.3 miles of dozer lines constructed or reconstructed on National Forest System Lands, as well as 51 miles of hand line. Rehabilitation and repair of areas disturbed by suppression included pulling back hand line and dozer line berms and slash and seeding with native grasses where appropriate, installing water bars on fire lines, and grading road surfaces affected by fire vehicle and equipment use.

Activities occurring or reasonably certain to occur on National Forest lands within these watersheds separate include reforestation, slash treatment (pile burning) fuel wood cutting; road maintenance; grazing on approximately 3,840 acres; and invasive weed treatments. To avoid or minimize adverse effects on spotted owls and marbled murrelet, all activities implement protection measures (appendix A) designed to minimize impacts to wildlife, unless consultation with the U.S. Fish and Wildlife Service (USFWS) allows otherwise.

In addition, about 250 miles of roadside danger tree abatement in 2018 and 2019 is proposed throughout the fire area for a maximum of 13,540 acres. Not all of these acres have burned. In fact, 34 percent (4,642 acres) currently have less than 25% basal area loss or are unburned. However, the maximum footprint of 250 feet on either side of the road (13,540 acres) was used for wildlife analysis purposes in the danger tree project CE. Of these acres, approximately 12,550 are within the Chetco and Pistol River 5th field watersheds, of which approximately 1,145 acres overlap with salvage units in alternative 2. As mentioned previously burn severity mapping for fires since 2012 have been incorporated into the current habitat data used for this analysis.

Approximately 67,000 acres of private land in the watersheds combined is generally managed for timber production, recreation and residential use. Industrial lands are managed in accordance with the Oregon Forest Practices Act. The OFPA requires modification of activities in some cases for wildlife species identified as sensitive, threatened, or endangered (http://www.oregon.gov/ODF/Working/Pages/FPA.aspx).

About 13,843 acres of private land are within the Chetco Bar fire perimeter. Assuming no salvage logging is taking place in areas that incurred 0-25% basal area loss, we can estimate up to 9,455 acres of salvage on nearby private lands has occurred, is occurring, or may occur in the near future.

The BLM manages approximately 13,740 acres of public lands in these watersheds. The BLM has proposed about 175 acres of fire salvage from the Chetco Bar fire also planned in the near future.

Oregon State Parks and Recreation manage approximately 320 acres of the Chetco watershed. Recreational use occurs year-round especially along the lower Chetco River. Trails and roads receive motorized and non-motorized use. Developed and dispersed camping and game and mushroom hunting occur seasonally.

Effects to Dead Wood

Direct and Indirect Effects to Snags from the Action Alternatives

Proposed Action activities, (Alternative 2) would reduce snags on approximately 4,378 acres.

Under alternative 2, proposed salvage outside of the RRSNF danger tree treatment areas would retain 4 snags per acre on approximately 357 acres of the Pistol River watershed and 2,588 acres of the Chetco River watershed which would not increase the area of either watershed with 0 snags because at least 4 snags per acre would be retained.

Under alternatives 2 about 182 acres of danger tree treatment and 5 acres of temporary road construction would occur outside of the RRSNF danger tree treatments in the Chetco River watershed and for the purposes of the analysis are considered to reduce snags to 0 per acre which would affect less than 0.1 percent of the Chetco River watershed. Landing acres are considered to overlap the roadside danger tree treatment areas. No danger tree treatment or temporary road construction would occur outside of salvage units or RRSNF danger tree treatment that would increase the area of the Pistol River watershed with 0 snags per acre.

Under Alternative 3 proposed salvage outside of the RRSNF danger tree treatment area would reduce snags on 106 acres of the Pistol River watershed and 1,185 acres of the Chetco River watershed. PDC for snag retention in harvest units would retain at least 4 snags per acre so proposed salvage outside of danger tree treatments would not increase the area of either watershed with 0 snags because at least 4 snags per acre. The same 187 acres of danger tree and temporary road construction would occur in the Chetco River watershed that are considered to reduce those acres to 0 snags per acre. No activities would occur within the Pistol River watershed outside of the RRSNF danger tree treatments that would reduce snags per acre to 0.

Cumulative Effects to Snags from the Action Alternatives

The western 1/3 of the land base in the two watersheds has a checker board pattern of ownership with private land interspersed with lands managed by BLM along the boundary of the RRSNF.

Approximately 67,000 acres of private land in the watersheds combined is generally managed for timber production, recreation and residential use. Industrial lands are managed in accordance with the Oregon Forest Practices Act.

Specific to the Chetco Bar fire, timber industry lands have ongoing active salvage within the Chetco Bar fire. Within this ownership, the Forest estimates it is reasonably foreseeable that 9,455 acres has been or will be harvested within the near future. Approximately 8,310 acres are within the Chetco River watershed and 1,145 are in the Pistol River watershed.

The BLM has approximately 170 acres of foreseeable harvest within the Chetco River watershed and about 5 acres in the Pistol River watershed. All with more than 50% basal area loss.

Approximately 12,550 acres of the RRSNF danger tree abatement project are within the Chetco and Pistol River 5th field watersheds, of which approximately 1,145 acres overlap with salvage units in alternative 2. Approximately 10,166 acres within the Chetco River watershed and 2,386 acres are in the Pistol River Watershed. Table displays the acres for each watershed considered for cumulative effects to snags.

Under either alternative snag retention PDC would shift the salvage units to the 2-4 snag/acre category but would not increase the area in either watershed with 0 snags per acre.

Under both alternatives, the additive effects of approximately 187 acres of danger tree abatement and temporary road construction considered to result in 0 snags per acre in the Chetco River watershed would be a minor (<1%) when combined with effects of the RRSNF danger tree abatement, BLM lands and private lands. If all of these acres were reduced to 0 snags per acre, it would increase the area of 0 snags per acre in the Chetco River watershed by 8 percent. Neither alternative would be additive to acres with 0 snags per acre in the Pistol River watershed.

Approximately 39 percent of the Chetco River watershed has more than 24 snags per acre. Even if all of the acres treated in Chetco were currently in the >24 snags/acre category, the watershed would still have 31 percent in the high snag category and would remain above the reference condition for >24 snags per acre.

Table 9. Total Acres of Snag Removal Considered for 5th Field Watershed Cumulative Effects

5th Field Watershed	Snag Removal Project	Proposed Action Alternative 2	Alternative 3
Chetco River (223,185 acres)	Danger Tree & Tmp Rd outside RRSNF Treatment	187	187
	RRSNF Danger Tree Treatment CE (burned and unburned)	10166	10166
	BLM	170	170
	Private Lands	8,310	8,310
Total Acres Reduced to 0 snags per acre		**18,833**	**18,833**
Pistol River (59,650 acres)	Danger Tree & Tmp Rd outside RRSNF Treatment	0	0
	RRSNF Danger Tree Treatment CE (burned and unburned)	2,386	2,386
	BLM	5	5
	Private Lands	1,145	1,145
Total Acres Reduced to 0 snags per acre		**3,536**	**3,536**

Direct and Indirect Effects to Down Wood from the Action Alternatives

The Chetco and Pistol River watersheds both currently have more acres with >5" diameter down wood cover than reference conditions (Figures 6 and 8). Both watersheds are close to reference conditions with total acres having >20" diameter down wood; the Chetco below reference by 2 percent (Figure 7) and the Pistol above reference by 4 percent (Figure 9). All activities would protect and avoid existing large down wood to the extent possible. All acres harvested for area salvage would retain 1.4 percent down wood cover as described on in Appendix A, A-2. Therefore, acres treated would increase percentage of the watershed with cover of down wood in the 1-2 percent cover category shown in the figures referenced above. The overall acres with 0 down wood would not change in either watershed.

Cumulative Effects to Down Wood from the Action Alternatives

The retention of down wood in the Action Alternatives would not be additive to any increase of the acres in either watershed with 0 percent cover caused by other projects as identified in the table above. The project may be additive to redistribution of down wood cover to a lower category (1-2 percent cover). Incidental loss of down wood greater than 20" diameter may contribute a minor amount of cumulative loss of large down wood cover ≥4 percent in either watershed, but would not be expected to change the overall acres with 0 percent cover of down wood >20" diameter in these watersheds. In the near and long-term, down wood cover of all sizes is expected to increase steadily as snags fall throughout the untreated area of the burn.

Effects Common to All Species Considered

No Action Alternative

Taking no action would not impact any species considered in this evaluation. Existing post-fire habitats in proposed units would continue to recover with new and re-sprouted vegetation that initially provide early seral habitat in these areas. Snags and down wood would continue to accrue at

variable rates and would initially provide levels of dead wood at higher than natural conditions until most of it decays or is consumed in future fires. Species that use post-fire, early seral habitat and snags and down wood are expected to use these areas until they develop into later successional habitat.

Alternatives 2 and 3
Snag and down wood retention per the project PDCs would lessen the loss of these habitat elements that are important to these species and ensure that some of this habitat will remain where it is available in harvest units.

Effects to Federally Listed Species

Northern Spotted Owl

The project biological assessment used for consultation with the US Fish and Wildlife Service provides a detailed evaluation of effects to these species for alternative 2. This evaluation provides a comparison of effects to this species for each alternative.

Methods used to analyze effects to spotted owls incorporates the amount and juxtaposition of proposed harvest in PFF habitat to existing NRF, spotted owl nest patches, cores areas, and home ranges. It also incorporates the Relative Habitat Suitability (RHS) Model developed by the US Fish and Wildlife Service in its current Spotted Owl Recovery Plan (USFWS 2011b, Appendix C) whereby authors found strong selection against habitats classified as low RHS. Given those findings, and for the purposes of this analysis, we assume that in areas or habitats (NRF/PFF) identified as low RHS, there is a very low potential for spotted owls to use these habitats for nesting. They may roost or forage in these habitats (depending on proximity to high RHS NRF) but they are unlikely to select these areas for nesting. Areas identified as low RHS in the Klamath province are generally on or near primary ridgetops, southerly tending slopes and in habitat not likely to support nesting and roosting habitats.

Depending on scale, changes to stand structure and habitats likely used by NSO for at least foraging, could occur from harvest in PFF habitat. Effects could be adverse when PFF is removed in high RHS, within nest patch or core areas, or if a considerable amount of PFF will be removed relative to the amount of NRF in a spotted owl site. Effects are expected to be inconsequential to a site when they are very small isolated amounts or distributed within in a home range such that it would not preclude or reduce the function of that site to persist.

In addition, the effects of associated activities such as temporary road construction, roadside danger tree abatement, landing construction, etc. to NSO and habitat are also evaluated. The effects of the RRSNF Roadside Danger Tree Abatement Project are accounted for where the acres that overlap area salvage activities are considered to be capable since the reduction of PFF in those acres was included in the consultation for that project.

The extent of these effects differs between alternative 2 and 3 due to the difference in total acres treated as detailed below. The "action area" analyzed for effects to NSO is a 1.3 mile buffer (provincial home range distance from nest) of proposed salvage units and includes evaluation of the entire home range for owl sites that overlap units and haul routes. All known NSO sites are buffered 1.3 mi for the home range, 0.5 mile for the core area (500 ac) and 300 m for the nest patch (70 ac) to evaluate effects to individual sites.

Tables 10 and 11 below compare the acres directly affected by Alternatives 2 and 3.

Table 10. Spotted Owl Habitats within Proposed Chetco Bar Fire Area Salvage Activities under Alternative 2.

Activity	Non-Forest	Capable	Dispersal	NRF	PFF1/ High RHS	PFF1/ Low RHS	PFF2/ High RHS	PFF2/ Low RHS	Total
Salvage Units	4	3,217	0	0	0	135	133	601	4,090
Landing construction	0	100.5	0	0	0	0	0	0.25	101
Temp road construction (13.5 mi)	<1	2	1	<1	<1	<1	<1	<1	5
Haul Rte Danger Tree Abatement[1]	13	94	12	12	3	0	11	37	182
Grand Total	**18**	**3,413.5**	**13**	**12**	**3**	**135**	**145**	**638**	**4,378**

1 This is in addition to the RRSNF Danger Tree Abatement project.

Table 11. Spotted Owl Habitats within Proposed Chetco Bar Fire Area Salvage Activities under Alternative 3.

Activity	Non-Forest	Capable	Dispersal	NRF	PFF1/ High RHS	PFF1/ Low RHS	PFF2/ High RHS	PFF2/ Low RHS	Total
Salvage Units	3	1,865	0	0	0	0	0	0	1,868
Landing construction	0	54	0	0	0	0	0	0.25	54
Temp road construction (13.5 mi)	<1	2	<1	<1	<1	0	0	0	3
Haul Rte Danger Tree Abatement[1]	13	94	12	12	3	0	11	37	182
Grand Total	**16**	**2,015**	**13**	**12**	**3**	**0**	**11**	**37**	**2,107**

1 This is in addition to the RRSNF Danger Tree Abatement project.

Proposed Action Alternative 2

Direct and indirect effects – Cutting and yarding, temporary road and landing construction

Gaps in areas dominated by standing dead trees are expected to result from project activities including the cutting of salvaged material and creation of landings and temporary roads. Removal of snags and possible destruction of existing down wood in areas identified as post-fire foraging habitat (PFF) may reduce foraging perches and modify habitat structure for prey species such as and mice, wood rats, and voles.

The effects of removing PFF are influenced by proximity to existing NRF habitat, and location in areas with high vs. low relative habitat suitability (RHS) for nesting habitat. PFF on locations with low RHS are less likely to develop into future nesting habitat due to exposure to wind, temperature and precipitation extremes, and lower prey base during the breeding season compared to more moderate climate conditions on moist, northerly slopes and in drainages where NRF stands have more structural complexity. Secondary PFF habitat with low RHS would have the lowest probability of being used by NSO now and would not likely provide future nesting habitat. Primary PFF would be more likely to be used for foraging now, and if located on a site with high RHS would potentially develop future NSO nesting habitat.

In PFF habitats, retention of legacy snags would minimize loss of structure that would contribute to

future NRF habitat. Legacy snag sizes vary depending on site condition, but are usually disproportionately large diameter trees that are often remnants that have persisted on the site after man-caused and/or natural disturbances. For example, these large snags contain one or more of the following characteristics: split or broken tops, burned out cavities, heavy decadent branching, large mistletoe brooms, or otherwise damaged to the degree that a cavity may form such as basal fire, lightning scars or other defect or decay.

Table 12 summarizes the degree of PFF habitat modification for individual home ranges affected by alternative 2. No harvest, danger tree abatement or temp road construction would occur in any nest patches. Only one core area (site 162) has a portion of proposed salvage unit (#137) within it which is 9 acres of capable lands that do not currently provide habitat for owls. Therefore, salvage harvest would not affect suitable NSO habitat within any core areas. There would be no danger tree abatement or temp road construction in any core areas.

Of the thirteen home ranges, four would have no change in habitat under Alternative 2. Seven home ranges would have no change in proportion of PFF1, and two would have 1 percent or less reduction in low RHS PFF1. Seven home ranges would have a reduction in total PFF2, site 142 would have a 1 percent reduction and site 307 would have a 4 percent reduction, with the other 5 sites having a 2 percent reduction. Because the proposed project would reduce PFF habitats in seven home ranges that have less than 40 percent suitable habitat, the effects of alternative 2 are considered likely to adversely affect NSO habitat.

Temp road construction would occur at the outer edges of the following home ranges; 0.25 mi in HR 256, 0.1 mi in HR 307, and 0.1 mi in HR 143 and 167. These temp road locations are primarily non-habitat for owls, but would occur within less than 0.1 acre of low RHS NRF in home ranges 143, 367 and 307 and less than 0.1 acre of low RHS dispersal in home range 256. Approximately 0.1 acre of low RHS PFF would be affected by temp road construction in site 256. These very small amounts of impacts on sites with low RHS are discountable at the home range scale.

No landings would be constructed in any nest patches and are not anticipated in any core areas. Landings are proposed within eight home ranges outside of core areas and would be constructed within capable or non-forest. One ground-based landing may occur in high RHS PFF1 where temporary road construction is proposed within one home range beyond the core area. This small amount of PFF1 reduction would be discountable at the home range scale.

Appendix A provides a decision tree with criteria for determining the level of legacy snag retention for a given unit and identifies the units that meet those criteria. Retained snags should occur as aggregates and occasional individuals where they would not be damaged by operations. Priority for retention should be given near areas of living trees or adjacent unburned vegetation, rock outcrops, and riparian avoidance areas.

Some effects to spotted owl prey species may occur due to implementation of this proposed action, however most scientific literature focuses on high-severity fire and its effects to prey species, not on the effect of salvage on prey species. Hayes and Cissel (1995) found no significant effect on small mammals that they studied, yellow-pine chipmunk (*Tamias amoenus*), Siskiyou chipmunk (*T. siskiyou*), golden-mantled ground squirrel (*Spermophilus lateralis*) and deer mouse (*Peromyscus maniculatus*), from salvage operations. https://www.firescience.gov/projects/04-2-1-95/project/04-2-1-95_final_report.pdf

In the short term, some small isolated pockets of fire-damaged trees in and adjacent to the salvage units will have needles and leaves and may provide some cover for NSO prey species. Depending on the affected stands' structural complexity and presence of unique habitat features, some prey species may be using burned habitats, especially as herbaceous and shrub species respond positively to the disturbance. However, much of the areas proposed for salvage harvest no longer provide habitat for primary prey such as flying squirrel or red tree vole due to the loss of canopy and green trees. Other mammalian (e.g. mice, woodrats) and avian secondary prey species may respond positively to the

new forest openings, or to the newly-created ecological edges, especially as herbaceous and shrubs respond in growing seasons immediately following fires.

Fontaine (2008) found that just after a single high severity fire event (The Biscuit Fire in SW Oregon), small mammal communities transitioned from low abundance and high species richness to high abundance and low species richness that was largely dominated by deer mice. Partial recovery to pre-fire conditions was observed at about 17 years after the fire with wood rats being present but vole species still absent relative to unburned mature forest. Post-fire salvage logging created a significant pulse of woody debris but no significant changes in densities or biomass of small mammals were observed. He concluded that fire effects on small mammal communities were much larger than those of post- fire salvage logging in the short term.

Zwolak and Foresman (2007) found varying degrees of response to stand replacement fire in their study with a large negative response from red back voles, a relatively common prey item for spotted owl. Zwolak and Foresman (2007) also found that relatively rare species such as northern flying squirrels and bushy-tailed woodrats were largely restricted to unburned areas in severely burned landscapes.

Harvest activities may cause direct mortality or disturbance of prey that use these post-fire habitats that could reduce foraging opportunities in the short-term, but would be a small proportion of any home range (Table 11) or the entire NSO action area (5 percent).

Direct and indirect effects – danger trees, noise, pile burning and revegetation site prep and planting

Felling of danger trees may occur in small scattered locations at landings and along 4.5 miles of haul routes associated with this project. Most of these routes are within non-habitat, however home range 307 may have 4 acres of low RHS PFF removed; and 8 acres of low RHS dispersal and 6 acres of low RHS NRF treated while maintaining the functionality of these habitats. No living trees would be felled, and snags that do not meet the definition of roadside danger trees would retained.

Research has shown that noise above ambient levels can increase stress responses in nesting birds and may cause them to flush from a nest during incubation of eggs or nestlings which can cause mortality and reproductive failure. Project activities that generate noise above ambient levels such as cutting, heavy equipment operation, and hauling within specific distances of known owl sites or unsurveyed NRF habitat would be restricted during the critical breeding period to minimize disturbance to nesting owls. Details about application of this seasonal restriction are provided in appendix A.

Given that occupancy of NSO sites in the action area has not been known for many years and owls in sites severely affected by the fire may have shifted their activity centers, any substantial patches of remaining high RHS NRF may be occupied by NSO. Any NSO nest sites found outside of known nest patches in the project area would be evaluated for additional unit restrictions. Roadside danger tree treatments in this proposal are not within disturbance distances of high RHS NRF. Hauling would be restricted from March 1 through June 30 on FSR 1376-319 which is a low use road.

Haul may occur on two low use roads for which this restriction would not apply: FSR 1407-150 and 1917-060. Approximately 70 acres of high RHS NRF occur within 35 yards of these roads. There are two areas where it is possible that NSO may nest within that distance, and therefore haul on these roads could potentially have adverse effects to breeding NSO.

Haul would not be restricted on maintenance level 3, 4 or 5 roads or other haul routes not listed above with restrictions, or not having marbled murrelet restrictions during the same time period.

Project pile burning would be restricted during the critical breeding season to minimize the potential for smoke to disturb nesting spotted owls depending on smoke dispersal. This restriction

is applied within ¼ mile of unsurveyed NRF habitat or known nest sites when drift smoke would settle into the stand rather than lift and disperse above the forest canopy. Project burning would most likely occur in late fall through early spring depending on precipitation, smoke management regulations and access to the project area during winter.

A mix of site appropriate trees would be planted in units where monitoring identifies areas that are not meeting standards for regeneration within matrix. Manual site prep for reforestation would minimally disturb prey that use early seral habitat where shrubs or small hardwoods are cut and the ground is scalped to plant tree seedlings. Similar disturbance to prey may occur several years later when brush is cut away from planted trees (release).

Table 12. NSO habitat pre-treatment condition and Alternative 2 effects for sites analyzed in Chetco Bar Fire Salvage Project Action Area

(HR = Home Range, Core = Core Area)

Site	Pre-treatment PFF1 Habitat (acres)/%HR		Pre-treatment PFF2 Habitat (acres)/%HR		HR PFF1 Reduced (acres harvest/ acres other)		HR PFF2 Reduced (acres harvest/ acres other)		HR Post-Treatment PFF1 Habitat (acres)/%HR		HR Post-Treatment PFF2 Habitat (acres)/%HR		NRF Habitat (acres)/%HR		Effects Rationale
	High	Low	High	Low	High	Low	High	Low	High	Low	High	Low	HR	Core	
98	160 (5)	51 (2)	133 (4)	153 (4)	0	14	5	1	160 (5)	37 (1)	128 (4)	152 (4)	414 (12)	36 (7)	Salvage harvest would reduce low RHS PFF1 by 1%. No change in proportion of any other PFF habitat.
101	186 (5)	41 (1)	51 (2)	48 (2)	0	18	5	8	186 (5)	23 (1)	46 (1)	40 (1)	793 (23)	200 (40)	No change in proportion of PFF1 at the HR scale. Harvest of PFF2 would result in 2% reduction of PFF2.
102	165 (5)	95 (3)	6 (<1)	95 (3)	0	0	0	0	165 (5)	95 (3)	6 (<1)	95 (3)	1148 (34)	115 (23)	No NSO habitat affected within this Home Range.
128	300 (9)	76 (2)	191 (6)	265 (8)	0	0	0	0	300 (9)	76 (2)	191 (6)	265 (8)	537 (16)	30 (6)	No NSO habitat affected within this Home Range.
142	237 (7)	51 (2)	13 (<1)	91 (3)	0	0	0	16	237 (7)	51 (2)	13 (<1)	75 (2)	1079 (32)	212 (42)	Salvage harvest of low RHS PFF2 would reduce the proportion available at the HR scale by 1%. No other habitat would be affected.
143	226 (7)	108 (3)	105 (3)	148 (4)	0	0	47	20	226 (7)	108 (3)	38 (1)	128 (4)	1009 (30)	219 (43)	No change in PFF1 habitat. High RHS PFF2 would be reduced by 1%, no change in proportion of low RHS PFF2.

Site	Pre-treatment PFF1 Habitat (acres)/%HR		Pre-treatment PFF2 Habitat (acres)/%HR		HR PFF1 Reduced (acres harvest/ acres other)		HR PFF2 Reduced (acres harvest/ acres other)		HR Post-Treatment PFF1 Habitat (acres)/%HR		HR Post-Treatment PFF2 Habitat (acres)/%HR		NRF Habitat (acres)/%HR		Effects Rationale
	High	Low	High	Low	High	Low	High	Low	High	Low	High	Low	HR	Core	
162	352 (10)	99 (3)	41 (1)	210 (6)	0	0	0	60	352 (10)	99 (3)	41 (1)	150 (4)	715 (21)	96 (19)	No change in proportion of PFF1 or high RHS PFF2 habitat. Low RHS PFF2 reduced by 3%.
200	193 (6)	94 (3)	7 (<1)	92 (3)	0	0	0	0	193 (6)	94 (3)	7 (<1)	92 (3)	975 (29)	112 (22)	No NSO habitat affected within this Home Range.
256	140 (4)	25 (1)	30 (1)	77 (2)	0.25	0	0	4	140 (4)	25 (1)	30 (1)	73 (2)	737 (22)	124 (25)	No change in proportion of PFF1 or PFF2, landing construction discountable.
307	176 (5)	107 (3)	215 (6)	487 (14)	0	8	31	123	176 (5)	99 (3)	184 (5)	364 (11)	376 (11)	9 (2)	No change in proportion of PFF1. High RHS PFF2 would be reduced 1%. Low RHS PFF2 would be reduced 3%.
308	39 (1)	32 (1)	1 (<1)	59 (2)	0	19	0	39	39 (1)	13 (<1)	1 (<1)	20 (<1)	1083 (32)	144 (29)	No change in high RHS PFF1 or PFF2; Low RHS PFF1 reduced by 0.5% Low RHS PFF2 reduced by 2%
309	75 (2)	14 (<1)	1 (<1)	47 (1)	0	0	0	0	75 (2)	14 (<1)	1 (<1)	47 (1)	1095 (32)	199 (39)	No NSO habitat affected within this Home Range.
367	276 (8)	93 (3)	64 (2)	137 (4)	0	0	24	58	276 (8)	93 (3)	40 (2)	79 (2)	1252 (37)	200 (40)	No change in PFF1; High and Low RHS PFF2 reduced by 1% each.

Alternative 3

Direct and indirect effects – Cutting and yarding, temporary road and landing construction

Alternative 3 salvage harvest would not occur in PFF or any other suitable habitat for northern spotted owls. There would be no effects to habitat within any nest patches.

There would be no harvest or temp road construction in any nest patches. There would be no temp road construction or danger tree abatement in any core areas. Temp road construction would occur at the outer edges of the following home ranges; 0.25 mi in HR 256, 0.1 mi in HR 307. These temp road locations are primarily non-habitat for owls, but would occur within less than 0.1 acre of low RHS NRF in home range 307 and less than 0.1 acre of low RHS dispersal in home range 256. Approximately 0.1 acre of low RHS PFF would be affected by temp road construction in site 256. These very small amounts of impacts on sites with low RHS are discountable at the home range scale.

Alternative 3 would have about 30 percent fewer landings, however the one landing in low RHS PFF1 proposed within NSO home ranges 256 (beyond the core area) is included in Alternative 2.

Snag retention in these units would not require additional legacy feature protection other than the Forest Plan direction supplemented by the DecAID recommendations for 4 snags/acre and 1.4 percent cover of down wood. Retained snags should occur as aggregates and occasional individuals where they would not be damaged by operations. Priority for retention should be given near areas of living trees or adjacent unburned vegetation, rock outcrops, and riparian avoidance areas.

Similar effects to spotted owl prey species as Alternative 2 would be expected, but would occur on 54% less acres under alternative 3. Alternative 3 units are not considered as valuable for foraging due to lack of PFF or any other suitable habitat.

Direct and indirect effects – danger trees, noise, pile burning and revegetation site prep and planting

Felling of danger trees may occur in small scattered locations at landings and along 3.5 miles of haul routes associated with this project. Though alternative 3 has a lower area of impact, the same segments of haul routes within two home ranges are needed as in alternative 2. Home range 307 may have 4 acres of low RHS PFF removed; and 8 acres of low RHS dispersal and 6 acres of low RHS NRF treated while maintaining the functionality of these habitats. No living trees would be felled, and snags that do not meet the definition of roadside danger trees would retained.

The same seasonal restrictions under alternative 2 to minimize potential noise disturbance to NSO would be applied under alternative 3 for project activities and haul. Potential adverse effects from haul on FSR 1407-150 and 1917-060 during the breeding season may also occur under alternative 3 and would have the same potential for adverse effects to breeding NSO as alternative 2.

Seasonal restrictions for project pile burning would be the same as under alternative 2, however less pile burning is expected under alternative 3 due to 54% fewer acres harvested.

Potential disturbance to prey for reforestation activities would be the same, though less extensive than alternative 2 due to fewer acres harvested.

Cumulative Effects to Northern Spotted Owl

The western 1/3 of the land base in the action area has a checker board pattern of ownership with private land interspersed with lands managed by BLM along the boundary of the RRSNF. There is one 174-acre parcel of private land within the RRSNF boundary. Within the action area, a range of

management practices occur on private lands from residential home site development to intensive industrial timber management.

Private industrial forest lands are managed for timber production and will typically be harvested between 40 and 60 years of age, in accordance with State Forest Practices Act standards. In 2008, data was requested from Oregon Department of Forestry and the Pacific Northwest Inventory and Analysis team to help determine harvest rates in the past decade on private lands within the Rogue Basin. These records indicated private harvest rates in Jackson and Josephine Counties have never exceeded 1.08 percent of the total private lands per year since 1998. These records did not provide information of pre-treatment habitat conditions. We anticipate losses of owl habitat on private lands, but cannot predict the rate of loss, or the specific location of harvest.

Specific to the Chetco Bar fire, timber industry lands have ongoing active salvage within the Chetco Bar fire. Within this ownership, post fire there are up to 677 acres of PFF. It is assumed by the Forest that all of this habitat has been or will be harvested within the near future.

The BLM has approximately 153 acres of PFF habitat. The BLM has proposed fire salvage within the burned area and for the purposes of this analysis it is assumed that they will have similar PDCs.

Approximately 1,149 acres of PFF removed within the RRSNF roadside danger tree abatement area were consulted on separate from this project, and are considered capable habitat in this analysis. In addition, danger trees would be treated in approximately 2,361 acres of NRF and 2,703 acres of dispersal with the function of those habitats maintained by the RRSNF roadside danger tree project.

Under Alternative 2, the effects of proposed removal of 921 acres of PFF combined with potential harvest of 145 acres of PFF on BLM and 619 acres on private lands may be additive to cumulative, effects resulting in removal of less than 4 percent of PFF in the NSO action area.

Alternative 3 would not harvest PFF, but would reduce a small amount due to danger tree treatments that are not included in the RRSNF danger tree treatment area. Therefore alternative 3 would have minor additive effects to BLM and private land harvest in PFF within the NSO action area.

Under both alternatives, additive effects of haul on two low use roads within disturbance distances of high RHS NRF during the breeding season would be minor when added to disturbance from haul required at the same time for the ongoing RRSNF roadside danger tree abatement project.

Effects to NSO designated critical habitat

Direct and indirect effects from the Action Alternatives

The biological assessment prepared for this project determined that implementation of alternative 2 would likely have adverse effects to critical habitat for the northern spotted owl due to loss of large snags within 209 acres PFF habitat that would otherwise contribute to physical and biological features (PBFs) of future suitable habitat for NSO. This removal amounts to 1.2 percent of the total habitat providing the same PBFs (NRF, PFF) within the action area, and 0.2 percent of these habitats in the entire KLW3 subunit. Therefore this reduction of PBFs is not expected to alter the subunits' ability to provide demographic support or connectivity for northern spotted owls because treatments would not result in loss of functioning NRF and dispersal across the entire unit or subunits for spotted owls to disperse and reproduce.

Under alternative 3, there would be no reduction of PFF habitat due to harvest activities. Approximately 0.25 acres PFF may be removed for landing construction which would be a discountable portion of the PBF habitat available within the KLW3 subunit.

Cumulative Effects from the Action Alternatives

Designated critical habitat for NSO does not include Private Lands. There are approximately 30 acres of BLM land that burned at high severity within the KLW3 subunit. The effects to PFF habitat under alternative 2 may be additive to cumulative effects if those BLM acres are included in their salvage project. However, 30 additional acres combined with alternative 2 would not result in any more removal than 1.3 percent of the PBF habitats available within KLW3 in the action area and 0.3 percent of these habitats available in the entire subunit. The effects of alternative 3 would be a discountable contribution to effects to KLW3 when combined with the potential effects of salvage harvest on BLM lands within the subunit.

Marbled Murrelet

Proposed Action Alternative 2

Direct and indirect effects – Cutting and yarding, temporary road and landing construction

None of the proposed activities would modify or remove existing suitable habitat for Marbled Murrelet. Murrelets nest in large trees with cover provided by the living canopy of the tree or adjacent trees. A total of 9.6 acres of burned occupied habitat ranging from 0.5 to 5 acres of units #147, 149, 160 and 165 overlap proposed units. These portions of occupied habitat burned with moderate to high severity and no longer provide suitable habitat for MAMU.

Salvage harvest of large legacy trees directly adjacent to potential suitable habitat for marbled murrelet could increase sun and wind exposure for a nest if located within a tree-height of a nest tree. Studies of edge effects from clear cuts into forested stands suggest that effects including increased understory vegetation growth and wind throw can be measured up to approximately 120 meters (393 feet) into the forested stand. Wind throw would be more likely for large trees that have weakened roots and/or reduced soil stability (Burton 2002, Ruel 1995). Suitable marbled murrelet habitat (NRF) within 400 feet of the proposed units was identified for potential edge effects. Twenty-six proposed units with low RHS PFF1 or scattered large legacy snags that did not meet the 40% canopy cover criteria for PFF, could have burnt legacy snags adjacent to existing marbled murrelet habitat. The amount of edge these units share with potential marbled murrelet habitat varies from 50 to 1500 feet and could affect up to 230 acres of suitable habitat. Project design criteria to protect live legacy trees with potential structure for nest habitat with a 70 foot no-treat buffer directly adjacent to salvage units would minimize potential for increased exposure of potential nest trees. This would be implemented for the following units adjacent to occupied habitat: *147, 148, 167, and 159.*

The following units would also be field checked for suitable nest trees adjacent to legacy snags where this PDC would also apply: *25, 29, 49, 53, 55, 58, 69, 99, 100, 103, 106, 107, 127, 132, 140, 141, 155, 157, 160, 168, 169,* and *170.*

This buffer of potential nest trees adjacent to salvage units would minimize effects to marbled murrelet habitat which would not likely adversely affect habitat for MAMU.

Direct and indirect effects – danger trees, noise, pile burning and revegetation site prep and planting

There is potential for disturbance or disruption of marbled murrelets if activities that produce noise above ambient levels during the breeding season. The proposed project would restrict salvage cutting, temp road construction, and danger tree abatement on low use roads to minimize disturbance to marbled murrelets during the critical breeding season.

Haul on maintenance level 3, 4 or 5 (high use) roads would not be expected to disturb murrelets due to the normal amount of public use on these roads and would not be restricted.

The following low use roads proposed for haul under alternative 3 would have seasonal restrictions described in the project design criteria: 1170-540, 1407-130, 1407-133, 1407-136, 1407-150, 1909-120,1917-125, 1917-060

Haul may occur during the breeding season on FSR 1407-150 and 1917-060. Approximately 28 acres of suitable habitat for MAMU has been verified to occur within the disturbance distance along these roads where seasonal restrictions would not be applied and adverse effects to breeding MAMU may occur.

Alternative 3

Direct and indirect effects – Cutting and yarding, temporary road and landing construction

Implementation of Alternative 3 would not affect suitable habitat for marbled murrelets. None of the remaining portions of units under alternative 3 would have substantial snags large enough to contribute to potential edge effects to any adjacent nest trees.

Direct and indirect effects – danger trees, noise, pile burning and revegetation site prep and planting

The same potential for disturbance from haul on low use roads FSR 1407-150 and 1917-060 would occur under alternative 3 which may result in adverse effects to breeding MAMU.

Cumulative Effects to Marbled Murrelet from the Action Alternatives

Indirect effects of Alternative 2 would be minimized with no-treatment buffers within 70 feet of adjacent potential nest trees and may have a very small contribution to effects of the RRSNF danger tree project, BLM or private lands that may be adjacent to potential nest trees. Alternative 3 would have no direct effects and is not expected to contribute to edge effects that would be additive to cumulative effects to habitat for MAMU.

However, both alternatives would have haul on two low use roads within disturbance distances of suitable MAMU habitat during the breeding season which may have small incremental effects when combined with haul required at the same time for the ongoing RRSNF roadside danger tree project in the fire area.

Effects to Marbled Murrelet Critical Habitat

Direct and Indirect Effects from the Action Alternatives

None of the proposed units or temporary roads are within critical habitat for Marbled Murrelet. Three landing locations are proposed under alternative 2 within critical habitat, but will be located directly adjacent to roads in burned areas that do not provide suitable habitat for MAMU. No landings are proposed within critical habitat under alternative 3. Approximately 24 acres of potential danger tree treatment on maintenance level 1 roads would occur within critical habitat but would not affect any suitable habitat. Neither alternative would affect critical habitat for marbled murrelet.

Cumulative Effects from the Action Alternatives

There are no direct or indirect impacts of either action alternative that would be additive to cumulative effect to critical habitat for the marbled murrelet.

Effects to Other Wildlife Species

Pacific Fisher and Pacific (coastal) Marten

Proposed Action Alternative 2

Direct and indirect effects – Cutting and yarding, temporary road and landing construction, danger tree abatement

Fishers and martens are associated with late successional habitat with high canopy cover and

decadence components (large snags, large down wood). Martens are more associated with high densities of understory shrubs and large down wood which gives them a predatory advantage.

Harvest activities and landing construction would have no impact on existing suitable habitat for these species. Harvest in 2,222 acres of unmanaged stands that may have legacy snags could reduce future rest and denning sites for these species. Snag and down wood retention in these stands per the project design criteria would ensure that some of these habitat features will remain in units that have them. While salvage harvest of the proposed units may reduce the quality and connectivity function of this early seral habitat in the fire area, salvage units are spread across the Chetco and Pistol River watersheds and situated within a larger mosaic of untreated acres that would continue to provide more complex early seral habitat. These units comprise less than 1 percent of the Chetco and Pistol River watersheds combined and would not increase the amount of these watersheds that have 0 snags.

Temporary road construction and roadside danger tree abatement may result in minor loss of large snags or down wood in small patches of live forest, however this would be discountable at the watershed scale.

Direct and indirect effects – noise, pile burning and revegetation site prep and planting

Pile burning of activity fuels would not affect habitat for fishers or marten. Site preparation for reforestation may disturb prey habitat and temporarily reduce foraging opportunities. Seasonal restrictions to avoid disturbance to spotted owls and marbled murrelet would also benefit fishers and martens during the breeding season. They would likely avoid habitat in close proximity to project activities during implementation.

Alternative 3

Direct and indirect effects – Cutting and yarding, temporary road and landing construction, danger tree abatement

Managed stands proposed for harvest under Alternative 3 would have no impact on existing habitat for fishers or martens. These stands lacked large legacy trees and likely have few legacy snags or large down wood. Harvest and associated activities may result in minor loss of large snags or down wood that would be discountable at the watershed scale.

Direct and indirect effects – noise, pile burning and revegetation site prep and planting

Pile burning of activity fuels would not affect habitat for fishers or marten. Site preparation for reforestation may disturb prey habitat and temporarily reduce foraging opportunities though may occur on less acres than alternative 2. Seasonal restrictions to avoid disturbance to spotted owls and marbled murrelet would also benefit fishers and martens during the breeding season. They would likely avoid habitat in close proximity to project activities during implementation, which would be less extensive than alternative 2.

Cumulative Effects to Fisher and Marten

Though salvage harvest of 2,222 acres of unmanaged stands under alternative 2 would retain snags and down wood which would provide some complexity in this early seral habitat, the reduction of complexity may be additive to cumulative effects from similar salvage activities on 145 acres of PFF on BLM, 619 acres of PFF on private lands, and the 1,149 acres of PFF in the RRSNF roadside danger tree treatments. These acres combined comprise 1 percent of these watersheds that would experience a reduction of large snags and down wood. The remaining untreated areas of the watershed would continue to provide these features and complex early seral habitats.

Due to lack of salvage harvest in PFF habitat, the effects of Alternative 3 would have a minor contribution to cumulative effects to fisher and marten.

Furthermore, proposed project activities that may occur concurrently and in proximity to ongoing or future salvage activities on BLM or private lands may be additive in that more acres would be avoided by fishers and martens during treatment activities under both alternatives, though effects of alternative 3 would be less extensive than alternative 2.

Conclusion

Implementation of alternative 2 or alternative 3 **May Impact Individuals and or Habitat, but not likely contribute towards a trend to federal listing or a loss of viability to the population or species** of **Pacific fisher** or **Pacific marten** (coastal population) due to potential disturbance to individuals. Alternative 2 would be more extensive in the reduction of large snags and down wood that could contribute to future habitat, though still a small proportion of the affected watersheds.

Bald eagle

Proposed Action Alternative 2

Direct and indirect effects – Cutting and yarding, temporary road and landing construction, danger tree abatement

Bald eagles are known to use large snags for rest and forage perches. There are no known bald eagle nest sites in the affected watershed on the RRSNF. Salvage harvest of 2,222 acres of unmanaged stands with snag retention PDC would retain snag densities at 4 snags per acre, however 182 acres of danger tree abatement and 5 acres of temporary road construction would cause a minor increase in acres with 0 snags (<1 percent) of the Chetco River watershed.

Direct and indirect effects – noise, pile burning and revegetation site prep and planting

Pile burning of activity fuels, and reforestation activities may cause eagles to avoid habitat in these areas when they occur, but would not affect habitat for bald eagles. Seasonal restrictions to avoid disturbance to spotted owls and marbled murrelet would also benefit eagles.

Alternative 3

Direct and indirect effects – Cutting and yarding, temporary road and landing construction, danger tree abatement

Managed stands proposed for harvest under Alternative 3 likely have few legacy snags. Harvest and associated activities may result in minor loss of large snags or down wood that would be discountable at the watershed scale.

Direct and indirect effects – noise, pile burning and revegetation site prep and planting

Pile burning of activity fuels, and reforestation activities under alternative 3 may cause eagles to avoid habitat in these areas when they occur, but would not affect habitat for bald eagles. They would likely avoid habitat in close proximity to project activities during implementation, which would be less extensive than alternative 2.

Cumulative Effects to Bald Eagles

Activities in PFF habitats within the RRSNF roadside danger tree treatment area, BLM lands, and private lands (1,979 acres total) may increase the acres with 0 large snags in these watersheds, which represent 0.7 percent of these watersheds combined. In addition, the RRSNF roadside danger tree project may reduce large snags within 2,361 acres of NRF habitat (0.8 percent of the watersheds), though the actual affected acres is expected to be much smaller due to low or unburned conditions.

Potential removal of large snags within 182 acres of danger tree treatments on haul routes and up to 5 acres of temporary road construction in the action alternatives that are outside of the RRSNF danger tree project may increase acres with 0 snags would be a minor contribution (< 0.1%) to

cumulative effects.

Proposed project activities that may occur concurrently and in proximity to ongoing or future salvage activities on BLM or private lands may be additive in that more acres would be avoided by bald eagles during treatment activities under both alternatives, though effects of alternative 3 would be less extensive than alternative 2.

Conclusion

Implementation of alternative 2 or alternative 3 **May Impact Individuals and or Habitat, but not likely contribute towards a trend to federal listing or a loss of viability to the population or species** of **the Bald Eagle** due to potential disturbance to individuals. Alternative 2 would be more extensive in the reduction of large snags that could contribute to rest or foraging perches, though still a small proportion of the affected watersheds.

Lewis' Woodpecker, Purple Martin, Pallid Bat and Fringed Myotis

Proposed Action Alternative 2

Direct and indirect effects – Cutting and yarding, temporary road and landing construction, danger tree abatement

Lewis' woodpecker use large conifer or mature oak snags with cavities for nesting. They also use riparian edge habitats for foraging. Purple martins use snags with cavities, usually near open water for nesting. Pallid bats and fringed myotis use large snags for roosts. Salvage harvest of 2,222 acres of unmanaged stands, landing and temporary road construction, and danger tree abatement may reduce snags that could potentially provide nest cavities for these species, however this is less than 1 percent of the Chetco and Pistol River watersheds combined. Potential removal of large snags within 182 acres of danger tree treatments on haul routes and 5 acres of temporary road construction that are outside of the RRSNF danger tree project may increase acres with 0 snags in a minor proportion of the waterhseds (< 0.1%). Snag retention PDC for salvage units would retain large snags and not add to acres having 0 large snags in the watershed. Snag retention adjacent to riparian protection areas may provide higher value snag habitat for these species.

Direct and indirect effects – noise, pile burning and revegetation site prep and planting

Pile burning of activity fuels, and reforestation activities may cause any of these species to avoid habitat in these areas when they occur, but would not directly affect their habitat. Seasonal restrictions to avoid disturbance to spotted owls and marbled murrelet would also benefit these species.

Alternative 3

Direct and indirect effects – Cutting and yarding, temporary road and landing construction, danger tree abatement

Managed stands proposed for harvest under Alternative 3 likely have few large snags with cavities. Harvest and associated activities may result in minor loss of large snags or down wood that would be discountable at the watershed scale.

Direct and indirect effects – noise, pile burning and revegetation site prep and planting

Pile burning of activity fuels, and reforestation activities may cause these species to avoid habitat in these areas when they occur, but would not directly affect their habitat. Seasonal restrictions to avoid disturbance to spotted owls and marbled murrelet would also benefit these speices.

Cumulative Effects to Lewis' Woodpecker, Purple Martin, Pallid Bat and Fringed Myotis

Activities in PFF habitats in the RRSNF roadside danger tree treatment, BLM and private lands (1,979 acres total) may increase the acres with 0 large snags in these watersheds, but these acres represent 0.7 percent of these watersheds combined. In addition, the RRSNF roadside danger tree project may reduce large snags within 2,361 acres of NRF habitat (0.8 percent of the watersheds), though the actual affected acres is expected to be much smaller due to low or unburned conditions.

Potential removal of large snags within 182 acres of danger tree treatments on haul routes and up to 5 acres of temporary road construction in the action alternatives that are outside of the RRSNF danger tree project may increase acres with 0 snags would be a minor contribution (< 0.1%) to cumulative effects.

Proposed project activities that may occur concurrently and in proximity to ongoing or future salvage activities on BLM or private lands may be additive in that more acres would be avoided by these species during treatment activities under both alternatives, though effects of alternative 3 would be less extensive than alternative 2.

Conclusion

Implementation of alternative 2 or alternative 3 **May Impact Individuals and or Habitat, but not likely contribute towards a trend to federal listing or a loss of viability to the population or species** of **Lewis' woodpecker, purple martin, pallid bat or fringed myotis** due to potential disturbance to individuals. Alternative 2 would be more extensive in the reduction of snags that could contribute to nest habitat, though still a small proportion of the affected watersheds.

Green sideband

Proposed Action Alternative 2

Direct and indirect effects – Cutting and yarding, temporary road and landing construction, danger tree abatement

This species is more likely to be present in unmanaged stands that have large woody debris or rocky areas. Potential impacts for these low-mobility species may include mortality from tree felling and equipment operation. Large down wood, large hardwoods and rocky areas would be retained and avoided to the extent possible, but some incidental loss or disturbance of these habitats may occur. Riparian protection buffers would likely protect potential habitat and any individuals that may occur there. Down wood retention near riparian protection buffers would improve habitat quality for these snails.

Direct and indirect effects – noise, pile burning and revegetation site prep and planting

Direct mortality could occur from pile burning especially if they are created several months prior to burning, but piles created by this project wouldn't likely be located where these snails are most likely to occur. Reforestation activities may disturb this species but not likely to cause mortality.

Alternative 3

Direct and indirect effects – Cutting and yarding, temporary road and landing construction, danger tree abatement

Managed stands proposed for harvest under Alternative 3 usually do not provide suitable habitat for these snails. Harvest and associated activities may result in minor loss of down wood that would be discountable at the watershed scale.

Direct and indirect effects – noise, pile burning and revegetation site prep and planting

Direct mortality could occur from pile burning especially if they are created several months prior to burning, but piles created for these units would not likely be located where these snails are likely to occur. There is a low likelihood of disturbance of individuals by reforestation activities in these units.

Cumulative Effects to Green Sideband

Activities in PFF habitats in the RRSNF roadside danger tree treatment, BLM and private lands (1,979 acres total) may provide similar habitat for the green sideband as the unmanaged stands considered above. In addition, the 2,361 acres of NRF potentially affected by the RRSNF roadside danger tree project would also likely provide habitat, though the actual affected acres is expected to be much smaller due to low or unburned conditions.

Harvest activities on 2,222 acres of unmanaged stands under alternative 2 may be additive to cumulative effects from salvage activities in similar habitat on BLM and private lands, and within the RRSNF roadside danger tree treatments. Therefore, potential habitat disturbance or loss of individuals may occur within 7,711 acres (3 percent) of the watersheds combined, which is a small proportion of the area these snails may inhabit in these watersheds.

Pile burning may also minimally additive in the scale (acres) of potential habitat disturbance or loss of individuals because piles from these activities would not likely be located where this species is likely to occur.

Effects of Alternative 3 would have a minor contribution to cumulative effects to green sidebands.

Implementation of alternatives 2 or 3 **May Impact Individuals and or Habitat, but not likely contribute towards a trend to federal listing or a loss of viability to the population or species** for the **Green Sideband** due to potential loss of individuals during treatments and loss or disturbance of down wood habitat. This would be more likely to occur in Alternative 2 where suitable habitat and individuals are more likely to occur.

Western bumble bee

Proposed Action Alternative 2

Direct and indirect effects – Cutting and yarding, temporary road and landing construction, danger tree abatement, pile burning, and reforestation activities

There is a very low likelihood that these species are present in proposed units based on the rarity of them in more suitable habitat where western bumble bees have been documented recently in Oregon. However, the likely increase in nectar and pollen producing shrubs and forbs in the recovering burned area would likely provide more potential habitat than was available prior to the fire.

Potential impacts for this species may include disturbance or mortality of individuals or destruction of ground nests from tree felling, equipment operation, and pile burning. Incidental loss or disturbance of suitable burrows or foraging habitat may also occur from these activities. The extent of these effects under Alternative 2 is approximately 1 percent of the Chetco and Pistol River watersheds, and 5 percent of the area in these watersheds that burned with >50% basal area loss. These areas are expected to continue providing suitable habitat for bees after project activities with continued growth of nectar and pollen producing vegetation.

Alternative 3

Direct and indirect effects – Cutting and yarding, temporary road and landing construction, danger tree abatement, pile burning, and reforestation activities

Direct and indirect effects to western bumblebees under alternative 3 are the same as alternative 2 though less extensive since the acres harvested would be reduced by 54 percent. The extent of these effects under Alternative 3 is less than 1 percent of the Chetco and Pistol River watersheds, and 2 percent of the area in these watersheds that burned with >50% basal area loss. These areas are expected to continue providing suitable habitat for bees after project activities with continued growth of nectar and pollen producing vegetation.

Cumulative Effects to Western Bumblebee

Proposed harvest and associated activities under alternative 2 may be additive to cumulative effects from similar salvage activities occurring concurrently in the RRSNF roadside danger tree treatment area, BLM, and private lands that may result in disturbance of habitat and potential loss of individuals or nest sites. This would occur within approximately 10 percent of the watersheds combined.

Additive effects of Alternative 3 to cumulative effects would be less extensive since salvage activities are proposed on fewer acres that when combined with concurrent, similar activities on RRSNF roadside danger tree treatment area, BLM, and private lands would affect approximately 8 percent of the watersheds combined.

Implementation of alternatives 2 or 3 **May Impact Individuals and or Habitat, but not likely contribute towards a trend to federal listing or a loss of viability to the population or species** for the **western bumble bee** due to potential loss of individuals or nests during project activities. Alternative 2 would have a higher potential for impacts due to more affected acres.

MIS Comparison of Alternatives

Direct and Indirect Effects of the Action Alternatives

As previously described, alternative 2 may reduce potential rest and foraging perches, but would not impact primary riparian habitat for eagles. Implementation of alternative 2 or 3 would not affect habitat primary nesting habitat associated with large creeks or rivers identified for management by the Siskiyou LRMP for **bald eagles** or **osprey**.

As described previously, alternative 2 would reduce large snags that may contribute to future legacy structure associated with suitable mature and old growth forest habitats for NSO and marten. This reduction would not occur within current functioning mature and old growth habitat for these animals. The reduction of post-fire legacy features would affect about 0.5 percent of the total mature and old growth habitat available across the forest. The reduction of these features under alternative 3 is discountable. Therefore, implementation of either alternative would not affect continued viability of the **spotted owl** or **American** (or coastal) **marten** at the Forest scale.

A study of post-burn occurrence of **pileated woodpeckers** after the Biscuit fire found that their occurrence in unburned and recently burned habitat was nearly the same (Fontaine, 2009). However, the study did not indicate if they were nesting in that habitat or only foraging. The preliminary update for MIS habitat (Table 7) shows that there has been a 5 percent reduction of suitable forested habitat for these woodpeckers since 2011. Implementation of alternative 2 would have similar effects to pileated woodpeckers as for spotted owl and martens by reducing the amount of large snags that may contribute to future habitat, though these watersheds are currently above reference conditions for large snags. This reduction would occur within less than 0.5 percent of available habitat. Therefore, implementation of either alternative would not affect continued viability of the **pileated woodpecker** at the Forest scale.

The **woodpeckers** include acorn, pileated, downy, hairy, and white-headed woodpeckers, as well as northern flickers and red-breasted sapsuckers. Fontaine (2009) found that downy woodpeckers occurred more frequently in post-burn habitat than unburned, but again it did not indicate if any nests were confirmed in that habitat. Like pileated woodpeckers, it appears that forested habitat for woodpeckers has been reduced by 5 percent at the forest level since 2011. Implementation of alternative 2 or 3 is expected to reduce snag habitat that these woodpeckers may use, though these watersheds are currently above reference conditions for snags greater than 10 inches DBH. This would occur within less than 1 percent of available habitat under alternative 2 and even less under alternative 3. Therefore, implementation of either alternative would not affect continued viability of the **woodpeckers** at the Forest scale.

Black-tailed deer and Roosevelt elk use all successional stages to meet their habitat needs for cover, forage and reproduction. Natural or created openings provide the majority of foraging habitat, which is assumed to be the most restrictive habitat component in this region (Forest Plan FEIS, III-106-107). Forage habitat is available within existing meadows, harvest units and burned areas less than 10 years old, and open canopy forested areas. Deer and elk are frequently seen in the project area. ODFW Roosevelt elk population survey data estimate a slight population increase in the Chetco unit since 2011.

Oregon Department of Fish and Wildlife has suggested a population objective of 32,600 deer for the Siskiyou National Forest. Forest Service and ODFW estimates of habitat capability vary however, both methods resulted in a proposed cover/forage ratio of 80:20 for the Siskiyou National Forest.

Fires have contributed to a 12 percent increase in early seral habitat (forage) since 2011 and a 5 percent decrease in thermal and hiding cover (Table 7). The increase in forage habitat and has brought the forest-wide ratio for cover/forage to approximately 67:33 rather than 71:29 prior to the fires. Implementation of alternatives 2 or 3 would not measurably affect thermal or foraging habitat for these species and continued viability of **black-tailed deer and Roosevelt elk** is expected at the Forest scale.

Cumulative Effects of the Action Alternatives

Implementation of either action alternative may be additive to ongoing or foreseeable projects on the Siskiyou portion of the RRSNF (SNF) that remove roadside danger trees or hazard trees at administrative sites or project work sites which contribute to legacy features for existing or future snag and down wood habitat used by northern spotted owls, Pacific marten, pileated woodpeckers and other woodpeckers. The extent of danger tree or hazard tree cutting across the SNF is roughly 200 snags per year, approximately 25 percent of which are usually greater than 20 inches dbh. In addition, the RRSNF 2017 Fire Danger Tree Project would remove danger trees within approximately 13,540 acres across the Siskiyou National Forest all related to the Chetco Bar Fire. DecAID analysis of snags per acre for the southwest Oregon mixed conifer habitat type across the Siskiyou NF, which is the habitat type that the proposed project would affect, show that current snag levels are lower than reference for both snags greater than 10" dbh (8 percent more acres with 0 snags per acre) and snags greater than 20" dbh (15 percent deficit).

As described earlier, PDC to retain snags in proposed salvage units would not increase acres with 0 snags per acre and would not be additive to effects of other foreseeable activities that may result in an increase of acres with 0 snags. Up to 187 acres of danger tree treatment and temporary road construction described previously for either alternative may result in a minor increase in acres with 0 snags which would be very minor (< 0.1%) at the scale of the Siskiyou NF.

The effects of snag reduction and habitat disturbance for all acres under the action alternatives (4,378 acres in alt 2 and 2,107 acres in alt 3) when combined with foreseeable danger treatments (13,540) would affect up to 3 percent of habitat available for woodpeckers across the Siskiyou NF.

The effects of large snag reduction (2,222 acres harvest, plus 182 acres danger trees, and 5 acres temp roads) and habitat disturbance for 2,409 acres under alternative 2 when combined with 13,540 acres of snag removal for roadside danger trees and administrative site hazard trees would affect less than 5 percent of habitat available across the Siskiyou NF for NSO, marten, and pileated woodpeckers.

There would be no measureable direct or indirect effects of either action alternative that would contribute to cumulative effects to hiding/thermal or foraging habitat for black-tailed deer or Roosevelt elk.

Migratory Birds

Direct and Indirect Effects of the Action Alternatives

Effects to migratory birds are considered by habitat attributes similar to MIS species, but are evaluated at the watershed scale rather than the forest scale.

All treatments have potential to disturb active bird nests during the breeding season which could cause failed reproduction or mortality of young, though seasonal restrictions for spotted owls would also provide protection for other nesting birds. To the extent possible, any active bird nests encountered during project activities would be given a no-treat buffer adequate to avoid a stress response (eg. flushing an adult from incubating eggs or nestlings, avoid feeding young, or defensive behavior) or mortality until young have fledged. Otherwise, adult birds and fledglings would likely avoid an area during activities until disturbances such as noise and smoke end. For all treatments, noise and smoke disturbance may cause short-term avoidance outside of habitat which may be cumulative with any concurrent treatment of adjacent plantations resulting in a larger area avoided.

Harvest and associated activities that reduce vegetation regrowth may displace species that prefer early seral and post-fire habitats. Reduction of suitable habitat for birds that use snags would also occur, though snag retention PDCs would ensure some snags remain post-harvest. This would be more extensive under alternative 2 since alternative 3 would treat 54 percent less acres. Nonetheless, both alternatives would affect 1 percent of the Chectco and Pistol River watersheds combined.

Cumulative effects of the Action Alternatives

Both alternatives would have effects to migratory birds that could be additive to similar salvage harvest activities occurring concurrently on the RRSNF, private and BLM lands. This would occur within up to 8 percent of watersheds combined.

Pollinators

Direct and Indirect Effects of the Action Alternatives

All proposed activities under both action alternatives could result in short-term loss of nectar and pollen due to ground and vegetation disturbance (e.g. ground-based harvest, equipment operation, reforestation activities). They could also result in disturbance or mortality of individuals from equipment operation, tree felling and pile burning. Alternative 2 would have more potential for these effects since alternative 3 would have a 54 percent fewer acres harvested. Both would affect less than 1 percent of the watersheds combined. Both would affect less than 1 percent of the watersheds combined and 5 percent of the area in these watersheds that burned with >50% basal area loss.

Cumulative effects of the Action Alternatives

Proposed harvest and associated activities under alternative 2 may be additive to cumulative effects from similar salvage activities occurring concurrently on the RRSNF, BLM, and private lands that may result in disturbance of habitat and potential loss of individuals or nest sites. This would occur within approximately 8 percent of watersheds combined.

Additive effects of Alternative 3 to cumulative effects would be less extensive since the acres harvested would be reduced by 54 percent.

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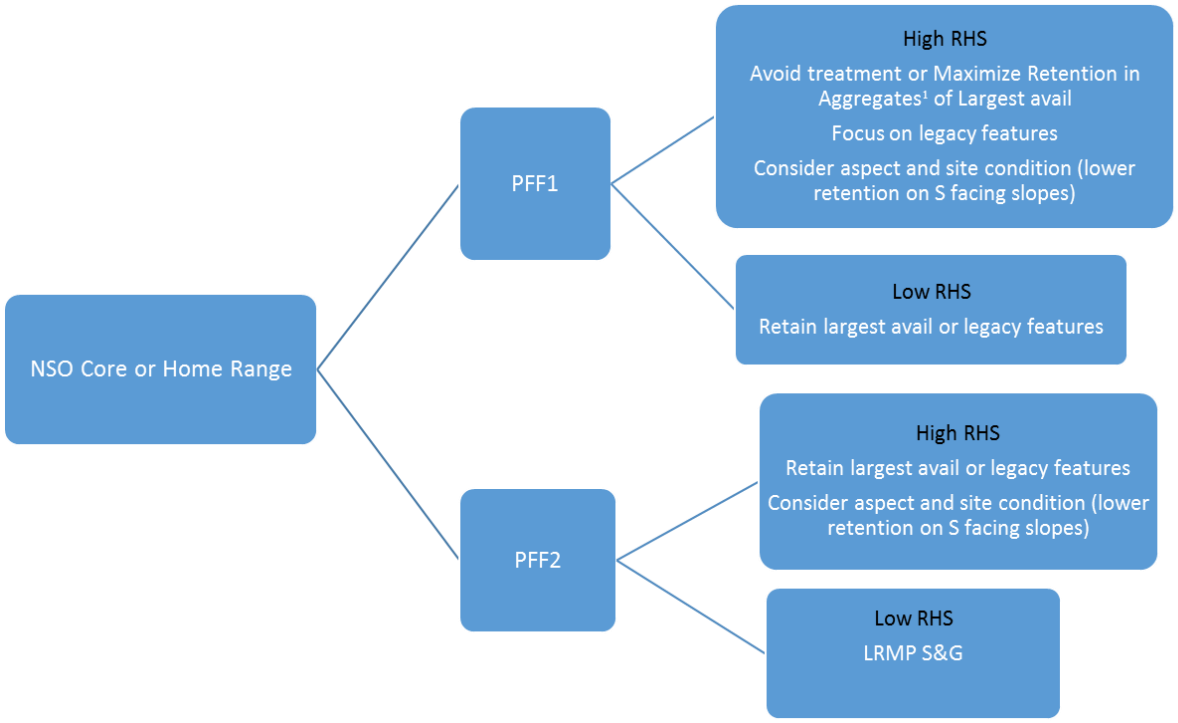
Appendix A – Mitigation measures and project design criteria

Following are project design criteria to be implemented in the Chetco Bar Fire Salvage Project to reduce impacts to wildlife.

Snag retention to reduce the effects of proposed salvage to PFF habitat within NSO core areas or home ranges would be implemented using the following hierarchy:



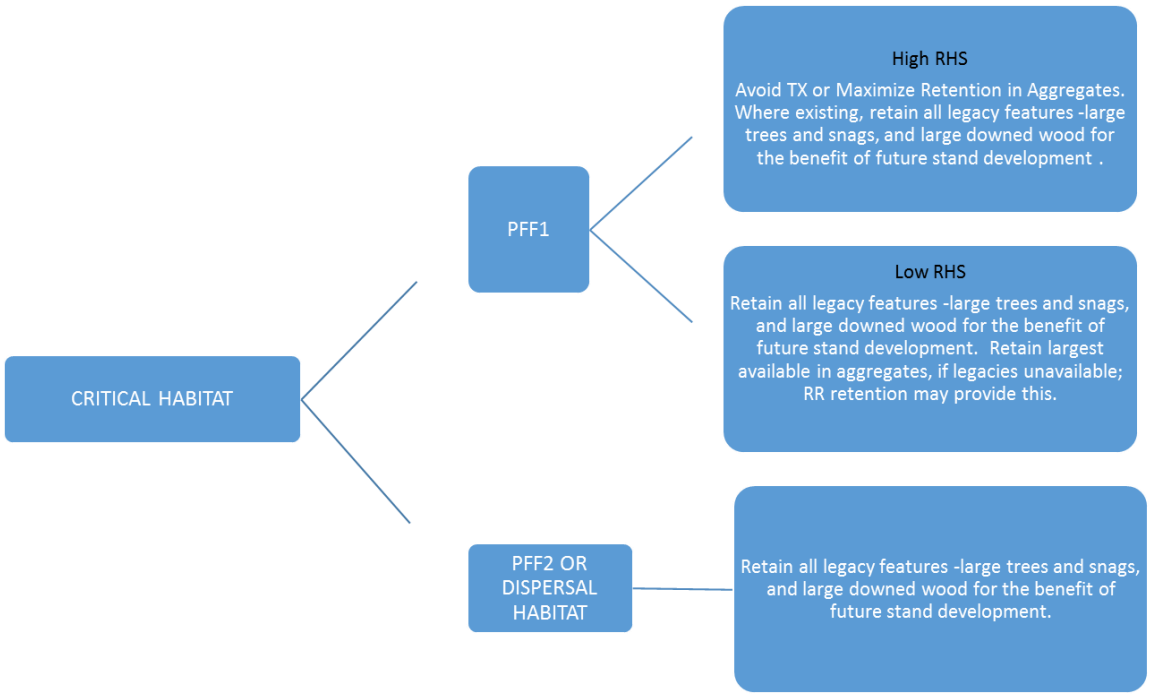
[1]Place aggregates in locations where incidental damage from implementation is minimized. Favorable locations would be lower portions of cable units and/or centered around unique areas such as rock outcrops, riparian areas/seeps/springs. The intention is minimize the overall size of openings and an increase connectivity of remaining suitable habitat in areas of likely use.

None of the proposed units are in PFF1/High RHS habitat. Only one unit (#137) is within an NSO core area and it is capable habitat.

Eleven units are within NSO home ranges with PFF1/Low RHS habitat:
35, 90, 107, 157, 163, 165, 180, 170, 104, 160, 156

Thirteen units are within NSO home ranges with PFF2/High RHS habitat:
48, 53, 55, 56, 104, 116, 117, 118, 119, 121, 122, 123, 180

Snag retention for proposed salvage in PFF habitat outside of NSO core areas or home ranges, but within NSO designated critical habitat would implement the following hierarchy:



One unit is within critical habitat with PFF1/Low RHS: *90*

One unit is within critical habitat with PFF2/High RHS: *104.* Proposed salvage would not occur in dispersal habitat.

The remaining units would apply the following retention PDC for snags based on Forest Plan direction and best available science using the Region 6 DecAID advisory tool:

In order to maintain 30 percent tolerance levels for wildlife that use snags in these matrix stands (outside of northern spotted owl post-fire foraging habitat in NSO core areas, home ranges or critical habtat), project units will retain aggregates and individual snags where feasible to meet 4 snags per acre greater than 10 inches with 2 snags per acre larger than 20 inches dbh where available. These should include hardwoods where available. Snag retention should be a priority near unburned edges, rock outcrops, riparian avoidance areas or remaining individual or clumps of green trees.

In addition, the following is the retention PDC for down woody debris in all units:

Desired down wood retention for wildlife is to protect existing large down wood and add wood (including retained snags) to meet the Siskiyou Supplement Standards for tanoak and dry Douglas fir plant series (10 pieces of down wood 20 inches at large end and 20 feet long, 5 pieces of down wood of same size in Douglas-fir series); and add smaller down wood to meet 1.4 percent cover where possible. Down wood retention should be a priority near unburned edges, rock outcrops, riparian avoidance areas or remaining individual or clumps of green trees.

Disturbance of listed wildlife species occurs when noise, smoke, vibration, or visual stimuli cause impairment of normal behavior. Mandatory PDC designed to avoid potential adverse disturbance effects to nesting birds and their young would be incorporated into all activities integral to the Proposed Action. PDC involving seasonal restrictions would be implemented unless surveys, following approved protocols, indicate either non-occupancy or non-nesting of target species, or as otherwise described.

Table A-1. Wildlife Mitigation measures and project design criteria

Species	Wildlife Design and Mitigation Measure	Objective	Where Applicable
NSO	**Nest patches (70 acres)** –salvage activities including temporary road or landing construction will not occur within any NSO nest patches.	Minimize adverse impacts to federally listed species (spotted owls).	All activities
NSO	**Existing snags and down wood**- Leave aggregates and individuals of large legacy snags (See PFF decision tree and affected units above). Avoid and protect existing large down wood ≥10 inches dbh to the greatest extent possible. Use treatment skips to avoid large dead wood (>20 inches dbh) or areas of accumulated dead wood.	Preserve existing dead wood to provide for species reliant on it; such as, owls, fisher, bats, woodpeckers, etc.	See discussion above.
NSO	**Retention of hardwoods** – retain large hardwood snags (>10" diameter) to the extent possible. Any hardwoods felled would be left onsite.	Maintain habitat diversity and benefit multiple species.	All units
NSO	**Noise above ambien**t (chain saws, felling, yarding, road construction, heavy equipment) within disturbance distances - Work activities (tree felling, yarding, road construction, etc.) that produce loud noises above ambient levels will not occur within restricted distances of any spotted owl nest site or unsurveyed high RHS NRF habitat between 1 March and 30 June (or until two weeks after the fledging period) – unless protocol surveys have determined the nest site or habitat not occupied, non-nesting, or failed in nesting attempt. Buffer distance for chain saws is 65 yards; for heavy equipment 35 yards).	Minimize adverse impacts to federally listed spotted owls.	26, 107, 110, 111, 125, 170, 171, 172 25, 93, 94, 97, 99, 100, 102, 103, 108, 113, 127, 128, 129, 138, 145, 160, 163, 165, 179
NSO MAMU	**Helicopter or blasting operations** - Follow the project design criteria for disturbance distances for helicopter size in the relevant biological assessment.	Minimize adverse impacts to federally listed species (NSO, MAMU).	26, 107, 110, 111, 125, 170, 171, 172
NSO	**Hauling** on roads not generally used by the public (usually ML 1 & 2) and within 35 yards of an owl nest site or unsurveyed NRF habitat– is restricted from 1 March through 30 June (or as determined by a wildlife biologist).	Minimize adverse impacts to federally listed species (spotted owls).	FSR 1376-319, 1407-906, 1407-130, 1917-070
NSO	**Burning** will not take place within 1/4 mile of a spotted owl site or unsurveyed NRF habitat between 1 March and 30 June (or until two weeks after the fledging period) unless substantial smoke will not drift into the NRF habitat or protocol surveys have determined the habitat is not occupied, or a known site is non-nesting, or failed in their nesting attempt.	Minimize adverse impacts to federally listed species (spotted owls).	All activity areas
MAMU	**Protect live legacies** - Maintain a 70-foot (1/2 site potential tree) un-treated buffer around any live legacy trees with potential structure. No live legacy trees would be removed for any reason including roads, landings or yarding corridors.	Minimize adverse impacts to federally listed species (murrelets).	All activities
MAMU	**Noise above ambient** levels (felling, yarding, road construction, equipment, etc.) within 120 yards of suitable murrelet habitat - Murrelet seasonal restrictions apply 1 April through 5 August. Daily timing restrictions apply 6 August through 15 September (activities can only occur from 2 hours after sunrise until 2 hours before sunset).	Minimize adverse impacts to federally listed species (murrelets).	All activities, all units unless biologist verifies no habitat within disturbance distance.

MAMU	**Hauling** on roads not generally used by the public (ML 1 & 2) - Murrelet seasonal restrictions apply 1 April through 5 August. Daily timing restrictions apply 6 August through 15 September (activities can only occur from 2 hours after sunrise until 2 hours before sunset).	Minimize adverse impacts to federally listed species (murrelets).	FSR 1170-540, 1407-130, 1407-133, 1407-136, 1909-120,1917-125
MAMU	**Burning operations** - Murrelet seasonal restrictions apply 1 April through 5 August. No burning will occur within 0.25 mile of occupied murrelet sites or unsurveyed, suitable habitat unless smoke will not drift into suitable habitat. All broadcast and under- burning operations (except for residual "smokes") will be completed in the period from two hours after sunrise to two hours before sunset.	Minimize adverse impacts to federally listed species (murrelets).	All activity areas
MAMU	**Clean work sites** - Clean up trash and garbage daily at all construction and logging sites. Keep food out of sight so as to not attract crows, ravens, and jays (predators on eggs and young murrelets).	Minimize predation risk to federally listed species (murrelets).	All activity areas
Early seral	**Seed** landings, decommissioned roads, meadows and other openings with appropriate native grasses, forbs and shrubs to benefit pollinators, ungulates and other early-seral species.	Provide for species dependent on grasses and flowering/fruit producing plants; such as, butterflies, bees, some birds and mammals, ungulates etc.	All activity areas
Misc.	**Incidental sightings** of sensitive species - Follow the design criteria and mitigation measures in relevant wildlife consultation documents, recovery documents, management plans or Forest Service policy.	Minimize adverse impacts to at-risk species.	All activity areas
Misc.	**Untreated buffers of active bird nests** encountered during project activities would be large enough to avoid soliciting a stress response that causes and adult to flush from incubating eggs or nestlings, avoid feeding young or exhibit defensive behavior until young have fledged.	Minimize adverse impacts to breeding migratory birds.	All activity areas

Table A-2 lists the disturbance distances for NSO and MAMU by activity:

Table A-2: Mandatory Restriction Distances to Avoid Disturbance to Spotted Owl Sites or suitable MAMU Habitat

Activity	Distance from NSO Site or unsurveyed High RHS NRF habitat	Distance from suitable MAMU habitat
Heavy Equipment (including non-blasting quarry operations)	105 feet	120 yds
Chain saws	65 yds	120 yds
Impact pile driver, jackhammer, rock drill	65 yds	120 yds
Small helicopter or plane	120 yds*	120 yds*
Type 1 or Type 2 helicopter	0.25 mile*	0.25 mile
Blasting; 2 lbs of explosive or less	120 yds	120 yds
Blasting; more than 2 lbs of explosives	1 mile	1 mile

* If below 1,500 feet above ground level

Above-ambient noises further than these Table A-1 distances from spotted owls are expected to have either negligible effects or no effect to spotted owls. The types of reactions that spotted owls could have to noise that the Service considers to have a negligible impact, include flapping of wings, the turning of a head towards the noise, hiding, assuming a defensive stance, etc. (USFWS 2003).

Appendix B – Policy

Forest Service Policy

Forest Service Manual 2600, section 2672.4, guides development of a biological evaluation to determine possible effects to endangered, threatened, proposed or sensitive species. The primary objective of this evaluation is to document that the proposed activities would not contribute to a loss of viability of native species or a trend towards federal listing. FSM 2672.43 provides a description of the administrative and field procedures associated with the preparation of a BE. Habitat examination direction is included in FSM 2634. All documents are available at http://www.fs.fed.us/im/directives/dughtml/fsm_2000.html.

ESA Policy

The Endangered Species Act, section 7(a)(2), requires federal agencies to consult with the U.S. Fish and Wildlife Service to ensure proposed actions do not jeopardize the continued existence of listed species or destroy or adversely modify designated critical habitats. In addition, section 7(a)(1) specifies our obligation to conserve listed species, including measures necessary to recover the species and remove them from the ESA list.

If a Federal action *may affect* a listed species or its critical habitat, the responsible Federal agency (action agency) must enter into consultation with the U.S. Fish and Wildlife Service. The resulting consultation document usually contains project design criteria or other conservation measures which are mandatory.

Region 6 Sensitive Species Policy

A full description of the Interagency Special Status/Sensitive Species Program (ISSSSP), agency direction, species lists and criteria for inclusion, conservation planning tools and species fact sheets are available at: http://www.fs.fed.us/r6/sfpnw/issssp/.

Sensitive species are species for which there is a documented concern for viability within one or more administrative unit within the species' historic range (FSM 2670.22, WO Amendment 2600-95-7). These species may require special management emphasis to ensure their viability and to preclude trends toward endangerment that would result in the need for Federal listing.

The Siskiyou LRMP requires the maintained viability of special status species. Protection includes managing habitat to minimize impacts, as well as prohibition of noise disturbance during the breeding season.

Northwest Forest Plan Policy (Survey and Manage Species)

Additional information on the Northwest Forest Plan, including documents for download, is available on the internet at: http://www.reo.gov/general/aboutNWFP.htm. Survey and manage policy is available at: http://www.blm.gov/or/plans/surveyandmanage/.

Federal lands within the range of the northern spotted owl and Oregon red tree vole are subject to the provisions in the Northwest Forest Plan including survey and management standards and guidelines. The NWFP amends the 1989 Siskiyou National Forest Land and Resource Management Plan.

Survey and Manage

On December 2009, the District Court for the Western District of Washington issued an order on partial summary judgment in favor of the Plaintiffs finding inadequacies in the NEPA analysis supporting the *Record of Decision to Remove the Survey and Manage Mitigation Measure Standards and Guidelines from Bureau of Land Management Resource Management Plans Within the Range of the Northern Spotted Owl* (FS et al. 2007)(2007 ROD). The District Court did not issue a remedy or injunction at that time.

Plaintiffs and Defendants entered into settlement negotiations that resulted in the 2011 Survey and Manage Consent Decree, adopted by the District Court on July 6, 2011.

The Defendant-Intervenor subsequently appealed the 2011 Consent Decree to the Ninth Circuit Court of Appeals. The April 25, 2013 ruling in favor of Defendant-Intervener remanded the case back to the District Court.

On February 18, 2014, the District Court vacated the 2007 RODs. Vacatur of the 2007 RODs has the result of returning the Forest Service to the status quo in existence prior to the 2007 RODs.

The District Court and all parties agreed that projects begun in reliance on the Settlement Agreement should not be halted. The District Court order allowed for the Forest Service and BLM to continue developing and implementing projects that met the 2011 Settlement Agreement exemptions or species list, for three categories of projects. These categories include:

1) Projects in which any survey and manage pre-disturbance survey(s) has been initiated (defined as at least one occurrence of actual in-the-field surveying undertaken according to applicable protocol) in reliance upon the Settlement Agreement on or before April 25, 2013;
2) Projects, at any stage of project planning, in which any known site(s) (as defined by the 2001 Record of Decision) has been identified and has had known site-management recommendations for that particular species applied to the project in reliance upon the Settlement Agreement on or before April 25, 2013; and
3) Projects, at any stage of project planning, that the Agencies designed to be consistent with one or more of the new exemptions contained in the Settlement Agreement on or before April 25, 2013.

Siskiyou NF LRMP Direction

Following are standards and guidelines pertaining to wildlife habitat management from the Siskiyou NF LRMP (USDA 1989) applied to the Chetco Bar Fire Salvage Project:

MIS

The National Forest Management Act of 1976 (NFMA) requires that each national forest identify management indicator species in the planning process and that "fish and wildlife habitats would be managed to maintain and improve habitat of selected management indicator species." By monitoring the habitat changes or trends of these particular indicator species, the effects of management activities on the associated animal communities can theoretically be determined.

Since the habitats of these indicator species cover the majority of the vegetative seral stages on the Forest, it is assumed that meeting the requirements of these species would assure that the needs of associated species would be met over time. (16 USC 1604 Sec. 6 g3b)

Management indicator species associated with the Siskiyou NF LRMP (USDA 1989) represent the issues, concerns, and opportunities to support recovery of federally-listed species, provide continued viability of sensitive species, and enhance management of wildlife and fish for commercial, recreational, scientific, subsistence, or aesthetic values or uses.

Management indicators representing overall objectives for wildlife, fish, and plants may include

species, groups of species with similar habitat relationships, or habitats that are of high concern (FSM 2621.1).

Indicator species represent other wildlife species which utilize a similar habitat type. As such, MIS act as a barometer for the health of various habitats and would be monitored to quantify habitat changes predicted by implementation of the Siskiyou LRMP (1989 pages IV-10 and 11, FEIS page III-102).

Migratory Birds

The Migratory Bird Treaty Act of 1918 (MBTA) implements various treaties and conventions between the U.S., Canada, Japan, Mexico and the former Soviet Union for the protection of migratory birds. Under the act, it is unlawful to pursue, hunt, take, capture (or kill) a migratory bird except as permitted by regulation (16 U.S.C. 703-704). The regulations at 50 CFR 21.11 prohibit the take, possession, import, export, transport, sale, purchase, barter, or offering of these activities, or possessing migratory birds, including nests and eggs, except under a valid permit or as permitted in the implementing regulations (Director's Order No. 131). A migratory bird is any species or family of birds that live, reproduce or migrate within or across international borders at some point during their annual life cycle.

The U.S. Fish and Wildlife Service (FWS) is the lead federal agency for managing and conserving migratory birds in the United States; however, under Executive Order (EO) 13186 (below) all other federal agencies are charged with the conservation and protection of migratory birds and the habitats on which they depend. In response to this order, the BLM and Forest Service have implemented management guidelines that direct migratory birds to be addressed in the NEPA process when actions have the potential to negatively or positively affect migratory bird species of concern.

Executive Order (EO) 13186 (66 Fed. Reg. 3853, January 17, 2001) lists several responsibilities of federal agencies to protect migratory birds. It directs federal agencies to avoid or minimize the negative impact of their actions on migratory birds, and to take active steps to protect birds and their habitat. This Executive Order also requires federal agencies to develop memorandum of understandings (MOU) with the FWS to conserve birds including taking steps to restore and enhance habitat, prevent or abate pollution affecting birds, and incorporating migratory bird conservation into agency planning processes whenever possible.

A memorandum of understanding (MOU) between USDA Forest Service and USDI Fish and Wildlife Service was signed December, 2008, and extended for two years on June 20, 2014. The purpose of this MOU is, *"to strengthen migratory bird conservation by identifying and implementing strategies that promote conservation and avoid or minimize adverse impacts on migratory birds through enhanced collaboration between the Parties, in coordination with State, Tribal, and local governments."*

Pollinators

In June of 2014 a Presidential Memorandum was issued to create a federal strategy to promote the health of honey bees and other pollinators. It outlined new steps for reversing pollinator losses and restoring populations, including establishment of the pollinator health task force which was tasked with developing a national pollinator health strategy. Primary components of the strategy are research, education and development of public-private partnerships. Federal agencies were also tasked with enhancing pollinator habitat on their managed lands, consistent with their mission and public safety. Specific tasks include the development of best management practices for enhancing pollinator habitat and establishment of a pollinator-friendly native seed reserve.

Appendix C – Species reviewed

The following tables list all species which are documented or suspected of occurring on the Rogue River-Siskiyou National Forest which are: federally listed, FS Region 6 sensitive, NWFP survey and manage, MIS or covered under an executive order or memo of understanding.

Habitat descriptions and distribution were primarily summarized from the following sources. See these source documents for detailed descriptions of habitat, how the habitat is utilized and species' behaviors.

- Species fact sheets at the Interagency Sensitive and Special Status Species Program website at http://www.fs.fed.us/r6/sfpnw/issssp/.
- *Land Mammals of Oregon* (Verts and Carraway 1998)
- *The Butterflies of Cascadia* (Pyle, Robert. 2002. Seattle Audubon Society, Seattle, WA)
- *Amphibians & Reptiles of the Pacific Northwest* (Nussbaum and others 1983; Storm and others 1983)
- *Birds of Oregon* (Marshall, D.B., M.G. Hunter, and A.L. Contreras, Eds. 2003. Birds of Oregon: a general reference, Oregon State University Press, Corvallis, OR. 768 pp.)
- *Bumble Bees of the Western United States.* (Koch, J., J. Strange, and P. Williams et al. 2012. Bumble bees of the western United States. USDA Forest Service.) http://www.fs.fed.us/wildflowers/pollinators/documents/Bumble beeGuide2011.pdf)
- *Birding Checklist for Josephine County, Oregon* (East Cascades Audubon Society Bend, OR) http://www.ecaudubon.org/county-checklists

Table C-1. Federally listed terrestrial wildlife species likely on Rogue River-Siskiyou National Forest and known range overlap with Gold Beach Ranger District.

Common Name	Scientific Name	Primary Habitat	GBRD Within Known Range?
Marbled murrelet (threatened)	*Brachyramphus marmoratus*	Old-growth w/in 50 miles of ocean	**Yes**
Northern spotted owl (threatened)	*Strix occidentalis caurina*	Mature, complex forest with adequate large dead wood	**Yes**
Gray wolf (threatened)	*Canis lupus*	Forested areas with sufficient prey.	No
Oregon spotted frog (threatened)			No

Table C-2. Forest Service regionally sensitive terrestrial wildlife species likely on Rogue River- Siskiyou National Forest and known range overlap with Gold Beach Ranger District.

Common Name	Scientific Name	Primary Habitat	WRRD Within Known Range?
American peregrine falcon	*Falco peregrinus anatum*	Cliffs > 75 ft in height	**Yes**
Bald eagle	*Haliaeetus leucocephalus*	Forest near large bodies of water.	**Yes**
Harlequin duck	*Histrionicus histrionicus*	Low to moderate gradient streams.	**Yes**
Lewis's woodpecker	*Melanerpes lewis*	Open woodland near water.	**Yes**
Northern waterthrush	*Parkesia noveboracensis*	Bogs, wet areas	**Potentially**
Purple martin	*Progne subis*	Snags in open habitats	**Yes**
Tricolored blackbird	*Agelaius tricolor*	Wet marsh with bulrush, cattail, nettles, willows and blackberries.	No
White-headed woodpecker	*Picoides albolarvatus*	Dry conifer forest with Ponderosa Pine	No

White-tailed kite	*Elanus leucurus*	Prairie, agricultural fields	**Yes**
Black salamander	*Aneides flavipunctatus*	Applegate Watershed, Jackson Co.	No
Foothill yellow-legged frog	*Rana boylii*	Permanent streams usually with rocky, gravelly, or sandy bottoms.	**Yes**
Siskiyou mountains salamander	*Plethodon stormi*	Siskiyou Mountains Jackson Co.	No
Western pond turtle	*Actinemys marmorata*	Permanent streams usually with rocky, gravelly, or sandy bottoms.	**Yes**
Green sideband	*Monadenia fidelis flava*	Moist, relatively undisturbed forest, west slope of coast range	**Yes**
Modoc Rim sideband	*Monadenia fidelis ssp. nov. (Modoc Rim)*		No
Oregon shoulderband	*Helminthoglypta hertleini*	Moist, rocky areas, woody debris, hardwood leaf litter; Jackson, Josephine, Douglas Co.	No
Siskiyou hesperian	*Vespericola sierranus*	Klamath, Jackson, Douglas Co.	No
Travelling sideband	*Monadenia fidelis celeuthia*	Low elevation rocky areas with oak and maple overstory. Jackson and Josephine Co.	No
Franklin's bumble bee	*Bombus franklini*	Douglas, Jackson, and Josephine counties in Oregon; open habitat with native flowering plants	No
Western bumble bee	*Bombus occidentalis*	Open, unmown habitat with native flowering plants.	**Yes**
Coastal greenish blue butterfly	*Plebejus saepiolus littoralis*	Coastal bogs & wet meadows.	No
Coronis fritillary	*Speyeria coronis coronis*	Serpentine (in Siskiyous).	**Yes**
Gray-blue butterfly	*Plebejus podarce klamathensis*	High elevation wet montane meadows with shooting star larval food plant; Jackson, Josephine, Douglas, Klamath Co.	No
Johnson's hairstreak	*Callophrys johnsoni*	Mature conifer forest with dwarf mistletoe growth.	**Yes**
Mardon skipper	*Polites mardon*	Serpentine meadows with native bunch grasses.	**Yes**
Siskiyou short-horned grasshopper	*Chloealtis aspasma*	Grassland, herbaceous habitats with elderberry; Jackson Co. Siskiyou Mountains	No
Fringed myotis	*Myotis thysanodes*	Caves, adits	**Yes**
Pallid bat	*Antrozous pallidus*	Brushy & rocky terrain often. Crevices in caves, shafts, buildings, rock piles, trees, etc. Most abundant in xeric areas.	**Yes**
Townsend's big-eared bat	*Corynorhinus townsendii*	Caves, adits	**Yes**
Pacific fisher	*Pekania pennanti*	Dense, continuous-canopy conifer forests at low to mid-elevations. Denning is in large snags & trees with dead tops.	**Yes**
Pacific marten	*Martes caurina*	Dense brush for cover	**Yes**
Sierra Nevada red fox	*Vulpes vulpes necator*	Southern OR Cascades	No
Wolverine	*Gulo gulo*	Subalpine, alpine, lodgepole,& red fir forests.	No

Table C-3. Northwest Forest Plan terrestrial wildlife species included in survey and manage standards and guidelines (Dec. 2003, but with Jan. 2001 ROD category assignment for red tree vole).

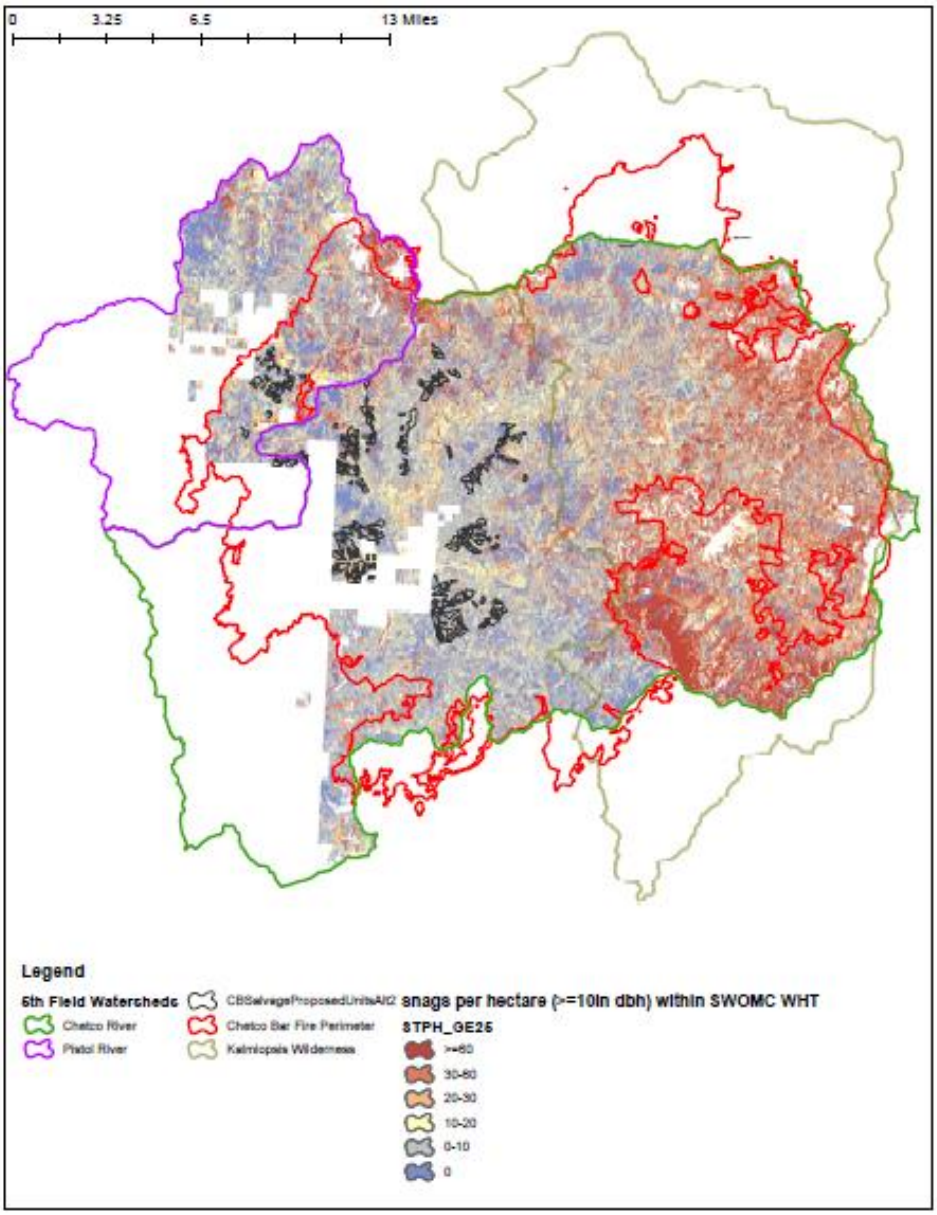
Common and Scientific Name	Category	Status On RRSNF	GBRD Within Known Range?
Larch Mountain salamander *Plethodon larselli*	A	Out of range	No
Shasta salamander *Hydromantes shastae*	A	Out of range	No
Siskiyou Mountains salamander *Plethodon stormi*, north range	D[1]	Documented	No
Siskiyou Mountains salamander *Plethodon stormi*, south range	A	Out of range	No
Van Dyke's salamander *Plethodon vandykei*, Cascade popn. only	A	Out of range	No
Great gray owl *Strix nebulosa*	A	Documented	No
Oregon red tree vole *Arborimus longicaudus*	C	Documented	**Yes**
Cryptomastix devia	A	Out of range	No
Cryptomastix hendersoni	A	Out of range	No
Deroceras hesperium (Evening fieldslug)	B[3]	Suspected	No
Helminthoglypta talmadgei	D[1]	Out of range	No
Hemphillia burringtoni	E	Out of range	No
Hemphillia glandulosa, In WA Western Cascades	E	Out of range	No
Hemphillia malonei, Washington	C	Out of range	No
Hemphillia pantherina	B[3]	Out of range	No
Monadenia chaceana (Chace sideband)	B[3]	Documented	No
Monadenia fidelis minor	A	Out of range	No
Monadenia troglodytes troglodytes	A	Out of range	No
Monadenia troglodytes wintu	A	Out of range	No
Oreohelix n. sp.	A	Out of range	No
Pristiloma arcticum crateris (Crater Lake tightcoil)	A[2]	Documented	No
Prophysaon coeruleum (Blue-gray taildropper), In CA & WA	A	Documented	No
Trilobopsis roperi	A	Out of range	No
Trilobopsis tehamana	A	Out of range	No
Vertigo n. sp.	A	Out of range	No
Vespericola pressleyi	A	Out of range	No
Vespericola shasta	A	Out of range	No
Special consideration species			
Monadenia infumata ochromphalis	B	Out of range	No
Ancotrema voyanum	E	Out of range	No
Oregon megomphix *(Megomphix hemphilli),* north.	A	Out of range	No
Oregon megomphix *(Megomphix hemphilli),* south.	F	Documented	No

Surveys and Site Management to Consider Based on Category: **Category A –** conduct pre-disturbance surveys and manage all known sites; **Category B** – for the fungi & lichens, conduct equivalent-effort surveys in old-growth forest only and manage all known sites; for mollusk conduct surveys in all suitable habitats and manage all known sites; **Category C** – conduct pre-disturbance surveys and manage high-priority sites; **Category D** – manage high-priority sites; **Category E** – manage all known sites; **Category F** – no requirement for project implementation; strategic surveys address information needs in relation to basic criteria for S&M; strategic surveys are the responsibility of the Regional Office and not field units.

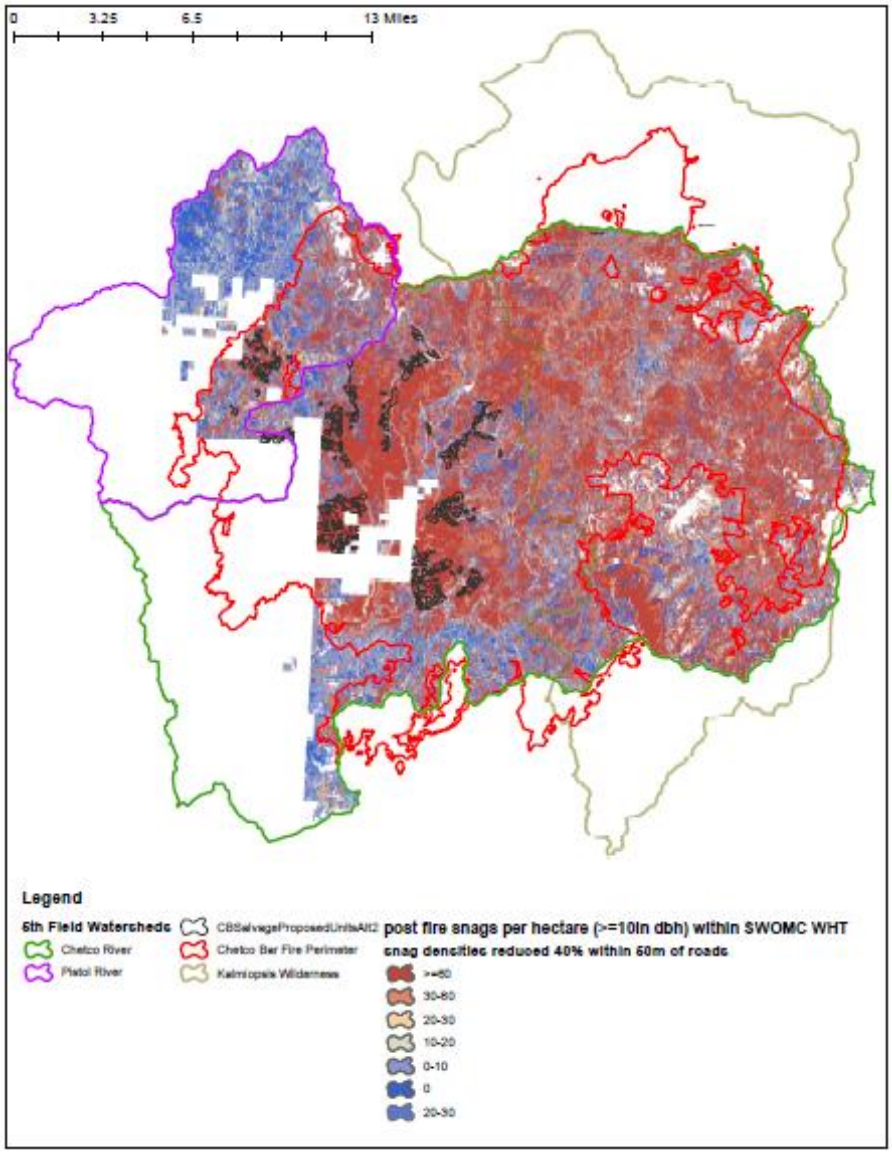
1 Although pre-disturbance surveys are deemed practical for these species, continuing pre-disturbance surveys is not necessary in order to meet management objectives.
2 For these species, until management recommendations are written, the following language will be considered part of the management recommendation: Known and newly discovered sites of these species will be protected from grazing by all practical steps to ensure that the local population of the species will not be impacted.
3 Based upon direction contained in the ROD, equivalent-effort pre-disturbance surveys are required for these mollusk species.

Appendix D – Dead Wood Distribution in the Chetco and Pistol River Watersheds

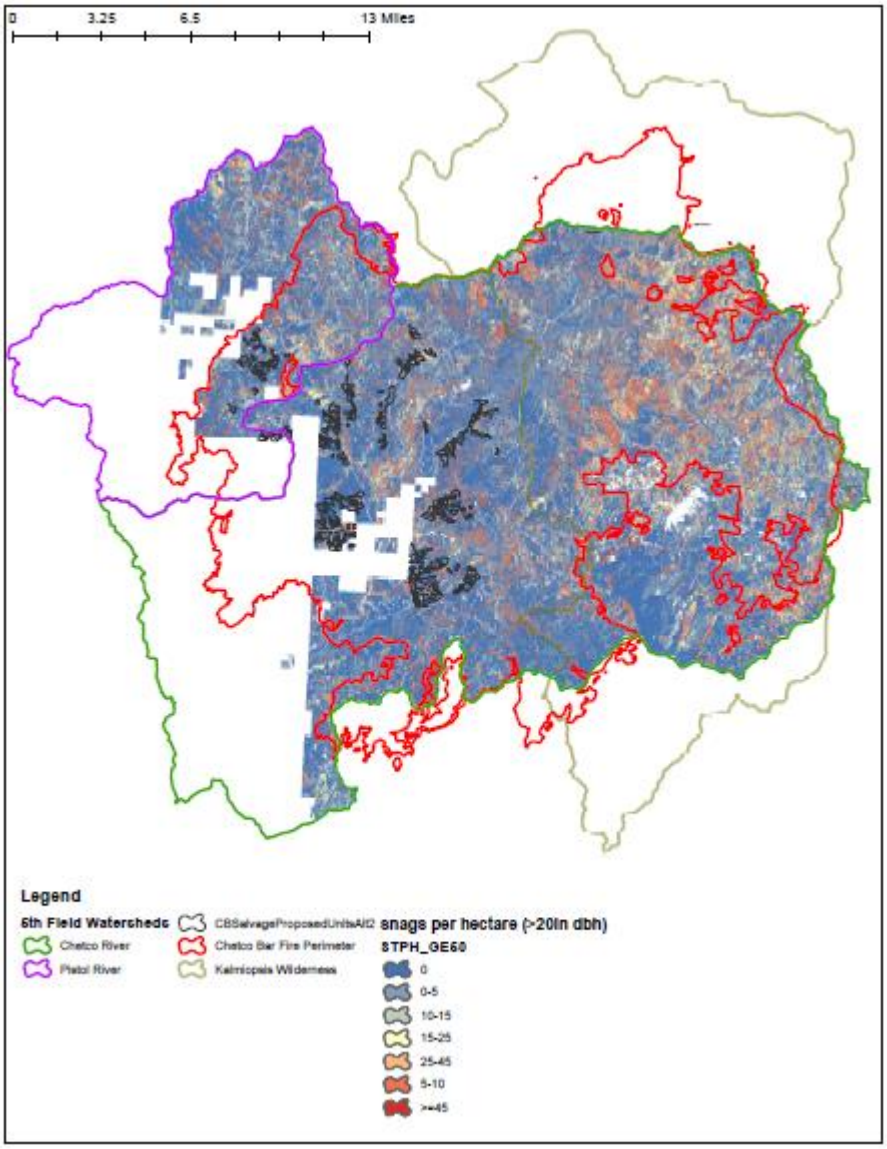
Map 1. Pre-fire distribution of all snags > 10in dbh on NFS lands within the Chetco and Pistol River 5th field watersheds.



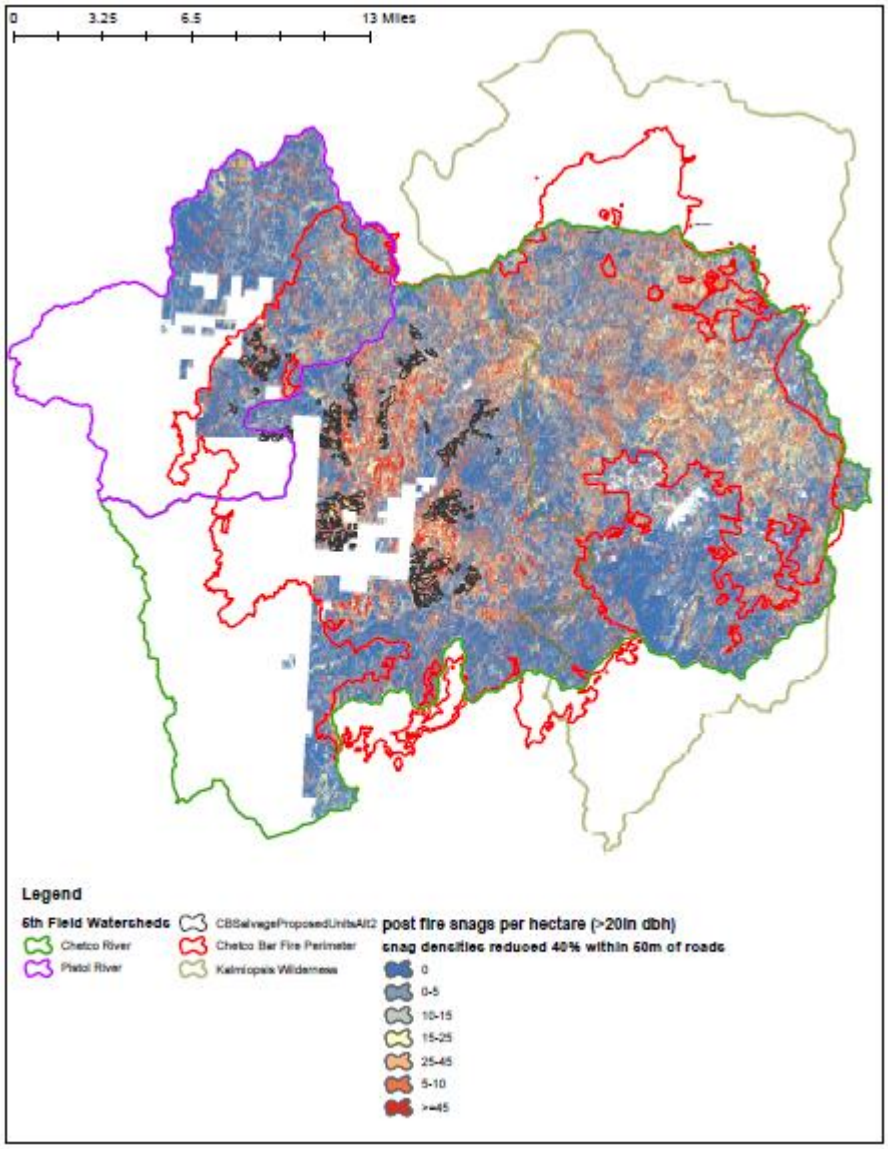
Map 2. Post-fire distribution of all snags > 10 in dbh on NFS lands within the Chetco and Pistol River 5th field watersheds.



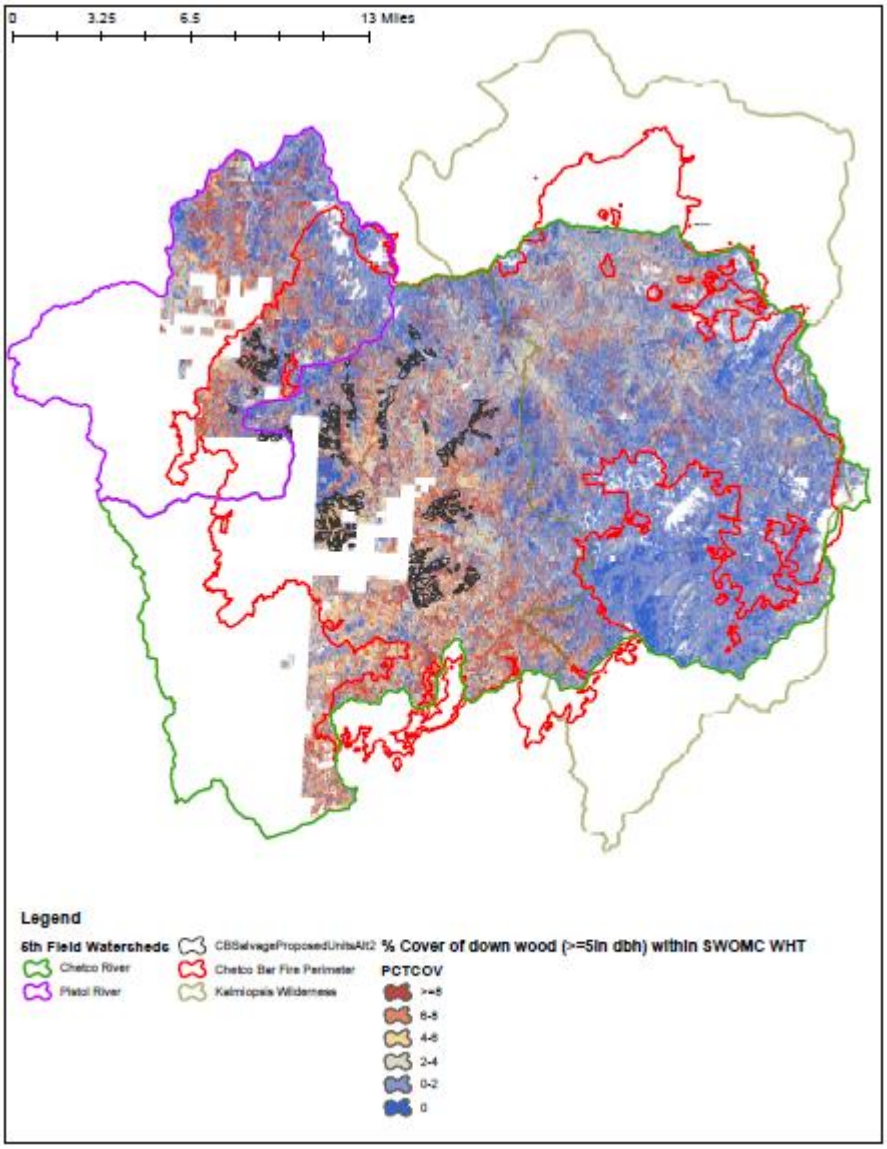
Map 3. Pre-fire distribution of all snags > 20 in dbh on NFS lands within the Chetco and Pistol River 5th field watersheds.



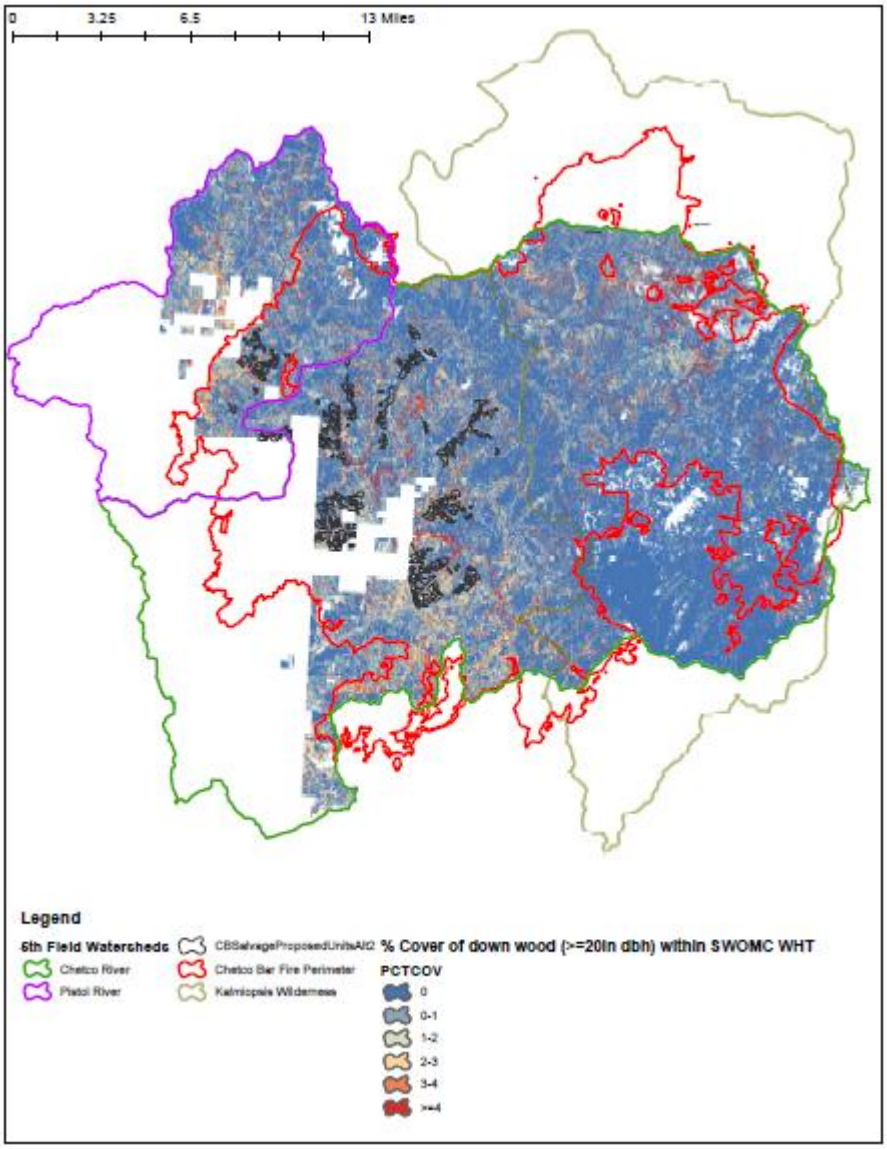
Map 4. Post-fire distribution of all snags > 20 in dbh on NFS lands within the Chetco and Pistol River 5th field watersheds.



Map 5. Pre-fire distribution of all snags > 20 in dbh on NFS lands within the Chetco and Pistol River 5th field watersheds.



Map 6. Pre-fire distribution of all snags > 20 in dbh on NFS lands within the Chetco and Pistol River 5th field watersheds.



Appendix E – Migratory and focal birds

1. Bird conservation regions (BCR)

Bird conservation regions (BCRs) are ecologically distinct regions in North America with similar bird communities, habitats, and resource management issues. BCRs are a hierarchical framework of nested ecological units delineated by the Commission for Environmental Cooperation (CEC). The CEC framework comprises a hierarchy of 4 levels of eco-regions. At each spatial level, spatial resolution increases and eco-regions encompass areas that are progressively more similar in their biotic (e.g., plant and wildlife) and abiotic (e.g., soils, drainage patterns, temperature, and annual precipitation) characteristics.

A mapping team comprised of members from United States, Mexico, and Canada assembled to develop a consistent spatial framework for bird conservation in North America. The team's US members met to apply the framework to the United States and developed a proposed map of BCRs. The map was presented to and approved by the US North American Bird Conservation Initiative (NABCI) Committee during its November 1999, meeting. The map is a dynamic tool. Its BCR boundaries will change over time as new scientific information becomes available. It is expected that the map will be updated every three years. More information on BCR's can be found at http://www.nabci-us.org/bcrs.htm.

The overall goal of these BCR lists are to accurately identify the migratory and resident bird species (beyond those already designated as federally threatened or endangered) that represent our highest conservation priorities.

BCR lists are updated every five years by the US Fish and Wildlife Service.

2. Birds of conservation concern (BCC)

In December, 2008, the U.S. Fish and Wildlife Service released *The Birds of Conservation Concern Report* (BCC) which identifies species, subspecies, and populations of migratory and resident birds not already designated as federally threatened or endangered that represent highest conservation priorities and are in need of additional conservation actions.

While the bird species included in *BCC 2008* are priorities for conservation action, this list makes no finding with regard to whether they warrant consideration for Endangered Species Act (ESA) listing. The goal is to prevent or remove the need for additional ESA bird listings by implementing proactive management and conservation actions. It is recommended that these lists be consulted in accordance with Executive Order 13186, "Responsibilities of Federal Agencies to Protect Migratory Birds." In the BLM and FWS MOU, both parties shall: *Work collaboratively to identify and address issues that affect species of concern, such as migratory bird species listed in the Birds of Conservation Concern (BCC) and FWS's Focal Species initiative. (BLM and FWS MOU, 2012, Section VI, page 4).*

This report should also be used to develop research, monitoring, and management initiatives. *BCC 2008* is intended to stimulate coordinated and collaborative proactive conservation actions among Federal, State, Tribal, and private partners. The hope is that, by focusing attention on these highest-priority species, this report will promote greater study and protection of the habitats and ecological communities upon which these species depend, thereby contributing to healthy avian populations and communities.

This project is within BCR 5, northern Pacific forest U.S. The birds of conservation (BCC) species list for BCR 5 is in Table E-1.

Table E-1. Birds of conservation concern (BCC) for bird conservation region 5 (BCR 5) (northern Pacific forest, U.S. only).

BCR 5 BIRD SPECIES	
Yellow-billed Loon (nb)	Marbled Godwit (nb)
Western Grebe (nb)	Red Knot (*roselaari* ssp.) (nb)
Laysan Albatross (nb)	Short-billed Dowitcher (nb)
Black-footed Albatross (nb)	Aleutian Tern
Pink-footed Shearwater (nb)	Caspian Tern
Red-faced Cormorant	Arctic Tern
Pelagic Cormorant (*pelagicus* ssp.)	Marbled Murrelet (c)
Bald Eagle (b)	Kittlitz's Murrelet (a)
Northern Goshawk (*laingi* ssp.)	Black Swift
Peregrine Falcon (b)	Rufous Hummingbird
Black Oystercatcher	Allen's Hummingbird
Solitary Sandpiper (nb)	Olive-sided Flycatcher
Lesser Yellowlegs (nb)	Willow Flycatcher (c)
Whimbrel (nb)	Horned Lark (*strigata* ssp.) (a)
Long-billed Curlew (nb)	Oregon Vesper Sparrow (*affinis* ssp.)
Hudsonian Godwit (nb)	Purple Finch

(a) ESA candidate, (b) ESA delisted, (c) non-listed subspecies or population of Tor E species, (d) MBTA protection uncertain or lacking, (nb) non-breeding in this BCR.

3. Avian Conservation Planning (Migratory and Resident Birds)

Migratory birds are those that breed in the U.S. and winter south of the border in Central and South America. Many of our well known passerine songbirds, flycatchers, vireos, swallows, thrushes, warblers, and hummingbirds, fall into this category. Most others are included in the resident category. Birds are a vital element of every terrestrial habitat in North America.

Conserving habitat for birds will therefore contribute to meeting the needs of other wildlife and entire ecosystems (Partners In Flight Continental Plan). Continent wide declines in population trends for many avian species has developed into an international concern and led to the creation of the North American Bird Conservation Initiative (NABCI). Under this initiative, plans have been developed for the conservation of waterbirds, shorebirds, seabirds and landbirds. The landbird initiative known as Partners-In-Flight (PIF) has developed a series of bird conservation plans for every state. PIF has gained wide recognition as a leader in the landbird conservation arena.

The Oregon and Washington Chapter of PIF was formed in 1992 and has since developed a series of publications aimed at assisting private, state, tribal and federal agencies in managing for landbird populations. The most recent and applicable publications for the two state area have been conservation plans for landbirds.

PIF bird conservation plans

Five conservation plans have been developed by PIF covering the various geographic regions found in Oregon and Washington. These documents have been prepared to stimulate and support a proactive approach to the conservation of landbirds throughout Oregon and Washington. They represent the collective efforts of multiple agencies and organizations within Oregon and

Washington. Participants included biologists from federal and state agencies, industry, private consulting firms, environmental organizations, and academia in order to ensure a full range of ideas and practicalities were addressed by the plans.

Recommendations included in the documents are intended to inform planning efforts and actions of land managers, and stimulate monitoring and research to support landbird conservation. The recommendations are also expected to serve as a foundation for developing detailed conservation strategies at multiple geographic scales to ensure functional ecosystems with healthy populations of landbirds.

The 2012 plan applicable to this project can be found on the OR-WA PIF web site: Habitat Conservation for Landbirds in the Coniferous Forests of Western Oregon and Washington v. 2.

The overall goal of PIF bird conservation planning is to ensure long-term maintenance of healthy populations of native landbirds. These documents are intended to facilitate that goal by identifying conditions and habitat attributes important to the landbird community, describing the desired landscape based on habitat relationships of a select group of species, providing interim management targets (i.e., biological objectives) to achieve desired conditions, and recommending management actions (i.e., conservation options) that can be implemented by various entities at multiple scales to achieve the biological objectives.

Implementation of parts or all of the strategy should help prevent reactionary approaches typically needed to address listed species issues. When these ecosystem-driven conservation strategies are fully implemented at large geographic scales, the aggregated effect will be the creation of landscapes that should function to conserve landbird communities.

The strategy for achieving functioning ecosystems for landbirds is described through the habitat requirements of "focal species". By managing for a group of species representative of important components in a functioning coniferous forest ecosystem, many other species and elements of biodiversity also will be conserved. Executive Order 13186 and the MOUs signed by the FS and BLM require agencies to incorporate migratory bird conservation into agency planning processes whenever possible. The PIF plans assist federal agencies in achieving this direction.

In addition to the 2012 conservation plan for Oregon and Washington, a revision of the PIF Conservation Plan for Canada and Continental United States was published in 2016 http://www.partnersinflight.org/ and revised in 2017. This plan provides a watch list of species with highest conservation concern based on species assessment process that includes current data about population distributions, threats and population trends to rate species risk of becoming endangered. Species listed in BCR5 are on the "yellow" watch list which intended to foster proactive conservation of these species to reverse population decline. In addition, the plan identifies for each region common species that are in steep decline with the same goal of proactively managing habitat and reducing threats for these species to reverse population decline.

4. Chetco Bar Fire Salvage migratory bird analysis

The Chetco Bar Fire Salvage project is entirely within BCR 5, northern Pacific forest, U.S. The 2008 list of birds of conservation concern (BCC) for BCR5 is in Table E-1 above. Table E-2 displays a list of focal species identified in the 2012 Oregon and Washington PIF conservation plan and additional species from the revised 2016 PIF species of highest conservation concern at the international scale that could occur in the Chetco or Pistol River watersheds.

In addition, bird strategy species identified in the ODFW Kalmiopsis Conservation Opportunity Area were considered for impacts from project activities. Habitat requirements for these species include snags and post-fire habitats that may be found in proposed units. Futhermore, Fontaine et al 2009 provides a list of species known to use post-Biscuit fire habitat which was used to help identify species on the BCC and PIF lists with these habitat requirements. This study compared the

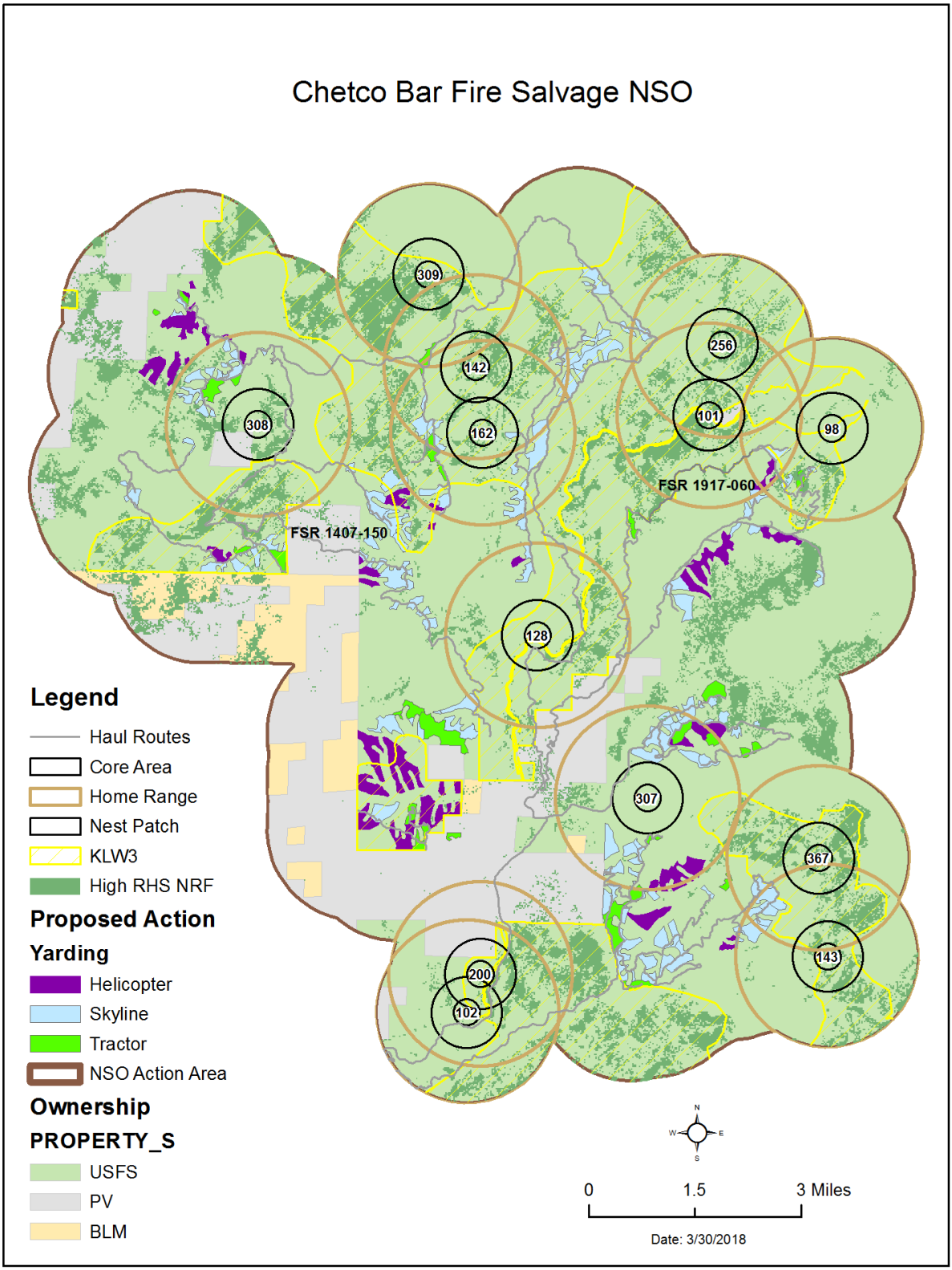
frequency of occurrence for sixty species between unburned, recently burned, old burn and repeat burned habitats. Species in tables 18 and 19 that occurred more frequently in burned habitats than unburned in the study, and are not included in analysis elsewhere (federally listed, R6 sensitive, MIS) were included in the evaluation of impacts to migratory birds (Table E-2)

Table E-2. Habitat attributes of PIF focal bird species (2012) and species of highest continental concern (2016) not previously addressed, that could occur in the Chetco and Pistol River watersheds (From 2016 PIF: bold = yellow watch list, *italic* = common in steep decline).

Forest Condition	Habitat Attribute	Focal Species
Old-growth/Mature	Large snags	Pileated Woodpecker
Old-growth/Mature	Large trees	Brown Creeper
Old-Growth/Mature	Deciduous canopy trees	Pacific-slope Flycatcher
Old Growth-Mature	Mid-story tree layers	*Varied Thrush*
Mature/Young	Closed canopy	Hermit/Townsend's Warbler
Mature/Young	Open mid-story	Hammond's Flycatcher
Mature/Young	Deciduous understory	*Wilson's Warbler*
Mature/Young	Forest floor complexity	Winter Wren
Young/Pole	Deciduous canopy trees	Black-throated Gray Warbler
Sapling/Seedling	Residual canopy tree	**Olive-sided Flycatcher**
Sapling/Seedling	Snags	Northern Flicker
Sapling/Seedling	Deciduous vegetation	Orange-crowned Warbler
Unique	Nectar-producing plants	**Rufous Hummingbird**
Unique	Mineral springs/seeps	**Band-tailed Pigeon**
Unique	Montane wet meadows	Lincoln's Sparrow
Unique	Large hollow snags	Vaux's Swift
Unique	Landscape mosaic forest	**Blue (Sooty) Grouse**
Klamath Mts. Mixed Forest	Pine-oak canopy/subcanopy trees	Purple Finch
Klamath Mts. Mixed Forest	Dense shrub understory	Nashville Warbler
Klamath Mts. Mixed Forest	Shrub-herbaceous interspersion	Hermit Thrush
Klamath Mts. Mixed Forest	Forest canopy edges	Western Tanager
Klamath Mts. Mixed Forest	Montane brushfields	Fox Sparrow
Klamath Mts. Mixed Forest	Post-fire	Lazuli Bunting
Conifer Forest	Large patches of moist conifer forest	**Chestnut-backed chickadee**
Young Forest/Shrub	Open shrub dominated	**Mountain quail**
Conifer Forest	Forest edge/shrub openings	**Evening grosbeak**
Conifer Hardwood Forest	Mixed conifer and hardwoods	*Pine siskin*
Forest edge riparian	Dense, moist vegetation	*Allen's hummingbird*
Young Forest/Shrub	Dense brush/young plantations	*Wrentit*

Appendix F – Maps

Map 7. Northern Spotted Owl data for the Chetco Bar Fire Salvage Project.



Map 8. Marbled murrelet data for the Chetco Bar Fire Salvage Project.